A Review of

The Literature of Reinforced Concrete

Reprint of Article in
The Engineering Digest
(New York)
BY

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to which is added

A List of Current Books on

CEMENT, CONCRETE, LIMES

and Allied Subjects, with Descriptive Notes

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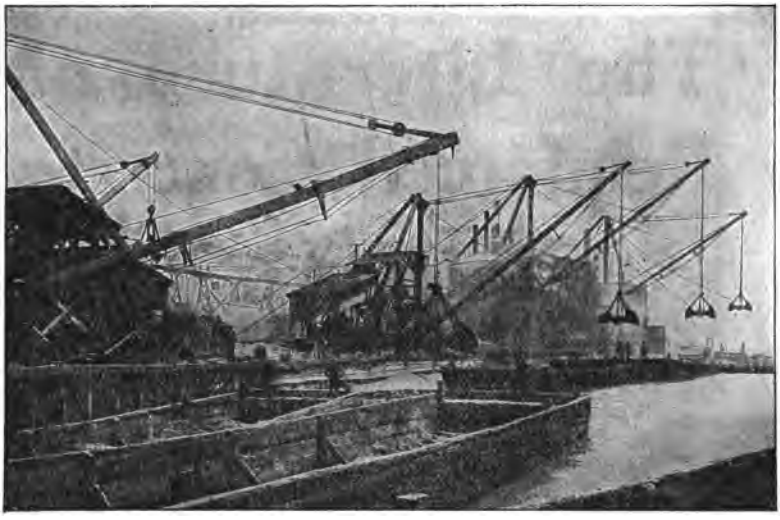

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PREFACE

ALTHOUGH reinforced-concrete construction in America began about thirty years ago, it is only during the last quarter of this period that its rate of increase has become so great as to compel the active attention of other engineers, architects and contractors than those directly engaged in its development. The increasing scarcity of timber and the difficulty of securing steel in structural shapes within moderate time limits has materially aided the development of this interesting type of building construction.

Previous to 1904 the literature in the English language on reinforced concrete consisted of scattered articles in technical periodicals, and of papers in the transactions of engineering and other allied societies, but during that year the growing need for a comprehensive and systematic treatise was supplied by the publication of three books within a few months of each other. Since that time there has been such a vast amount of literature on the subject that it is difficult for those interested to select the book that best suits their special requirements.

Hundreds of requests have been received by the Engineering News Book Department for information as to the "best" books or regarding the value of some special book or for a comparison of two or more books, and the impossibility of satisfactorily entering into such details in correspondence has led to the preparation of the following list of current works, with brief descriptions, sufficient, however, to give some idea of the scope of each.

Any of these books can be supplied by The Engineering News Book Department (220 Broadway, New York) and will be sent prepaid, to any part of the world, on receipt of price, and in every case when the books are in print and available in New York City, they will be shipped the same day that the order is received.

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THE LITERATURE OF REINFORCED CONCRETE

BY

LEON S. MOISSEIFF, A. M. Am. Soc. C. E.

(Reprinted from "The Engineering Digest.")

A dozen years ago reinforced concrete was still in its infancy as a building material and its applications in structures bore largely the imprint of an experimental character. Not that the structures then built were intended to be used for testing purposes or that their owners erected them to demonstrate the fitness of reinforced concrete—that stage was then passed already—but the entire process of designing, contracting and erecting of a reinforced-concrete structure generally partook of the nature of a transaction which was entered into by one of the parties with more or less hesitation. It fell to the share of the promoting enthusiast, who in most cases was also the contractor, to make as brilliant a display of the achievements of reinforced concrete as he possibly could to convince the buyer and his engineer of the wisdom of their investment. With this in view he enumerated the number of various structures successfully erected, illustrated them by as many cuts as he could lay his hand on, and was especially emphatic about a number of load tests of floors, showing sacks of sand or pig iron piled up to an impressive height, or a number of cars extending over a bridge. This was often strengthened by a number of testimonials on the good behavior of the structures.

The competition with steel structures had made it, however, apparent to the reinforced concrete interests that it was not sufficient to be able to point to a number of successfully built structures, which sustained great loads, to convinc the engineer who considered the advisability of using the new material. It was pressingly felt that the design and proportioning of reinforced-concrete structures and their parts must be based on a satisfactory theory and the use of rational formulas, to be able to compete with the degree of definiteness and assurance which characterizes steel construction. In other words, the builder of reinforced concrete had to explain the behavior of his structures by assigning to each element its due share in sustaining loads. He had to furnish sufficient data to enable the buying engineer to design and specify his structure with a practical certainty of its safety and fitness to his purposes.

At the same time the engineering profession had come to realize the great possibilities of the new building material, and, surprised by the boldness of some of the structures built with it, began to

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devote much attention and serious study to the new problem. Numerous articles thus made their appearance in the engineering periodicals of the world, supplying the reader with a variety of hypotheses and a still greater variety of formulas. These formulas were either empirical or theoretical. The former mostly originated with the practical builders and contractors and were based on the range of their personal experience, and were intended for ready use in designing and estimating a limited number of structures built by them. The majority of the latter, on the contrary, came from engineers who tried to solve the problem on the broader foundation of the theory of elasticity of solids, and were intended to cover as wide a range as practice may ever require.

Both sides lacked at the beginning the most essential data required for the establishment of structural formulas, namely, the information supplied by a thorough knowledge of the resistance of the material and its elastic behavior under stress. Naturally, they reasoned by analogies based on the elasticity of iron and steel, and deduced formulas from the theory of composite structures applicable to metal and timber. Fortunately, the structures themselves were quite simple, and with good material and careful workmanship it was difficult to go wrong.

Gradually the results of carefully prepared and observed tests conducted by experienced experimenters began to appear in the proceedings of the engineering societies and in the technical press, furnishing material for extended discussions and for verifying and correcting the formulas in vogue. The building authorities of many cities were confronted with the new building material for which they had no regulations or ordinances, and were looking for expert advice and deciding tests. Finally, organized engineering bodies, finding it to be of vital importance to the profession, and government boards began to investigate reinforced-concrete construction. Periodicals specially devoted to reinforced concrete were created, several with good success.

All this ever-increasing mass of information was spread like a floating sea over many journals, transactions, reports and trade publications, and the task to condense and filter it down to a book which should form one organic whole, where consecutive thought should separate the wheat from the chaff, required superhuman efforts. Only engineers who attempted to meet this demand even half way, know the amount of labor and time required for it. But the demand for books on reinforced concrete was growing more urgent as the advantages of reinforced concrete were more recognized.

The first extended and consecutive treatise on reinforced concrete was written by the Belgian engineer, Paul Christophe, and published in 1899 in the "Annales des Travaux publics de Belgique" in three successive articles. It met with much appreciation and was enlarged and reprinted in book form in 1902 as the well-known work "Le Béton Armé et ses Applications." It was translated into several European languages, and the form of arrangement of the matter in the book served as a model for most books of this kind. Its almost

eight hundred pages are divided into five chapters, three of which cover more than three-quarters of the book and consist in an assortment of the various systems of construction used, their numerous applications and the theories proposed by the most prominent writers on the subject. One chapter is devoted to the work of construction in the field and another discusses the advantages and disadvantages of reinforced concrete.

Under the difficult conditions discussed in the above, Christophe produced an excellent work, which placed much of the then available matter in a condensed form within the reach of the reader, and while the 300 pages devoted to descriptions and illustrations of the applications of reinforced concrete appear to us to-day as superfluous, this is because they have outgrown their demonstrative value. In general, Christophe used good judgment in his selections and was one of the first to adopt the straight-line formula for the flexure of beams.

The much more voluminous work of Berger and Guillerme, published in French, under the title "La Construction en Ciment Armé" in the same year, follows practically the same arrangement as Christophe, but the reading matter is quite incoherent and one feels the lack of a guiding spirit. It is also much too bulky and unhandy.

No books on reinforced concrete were published in English before the year 1904, when quite a crop of them appeared in the market. It must, however, be stated that in 1902 Prof. W. Cain rewrote much of his little book on "Voussoir Arches Applied to Stone Bridges, Tunnels, Etc.," and changed its title to "Theory of Steel-Concrete Arches and of Vaulted Structures." In it Prof. Cain gives his well-known semigraphical treatment of elastic arches as applied to reinforced concrete, covering the case most fully. It is an excellent little book, which was subsequently made use of both by Marsh and Buel and Hill. While it requires quite some practice to readily handle the method, it can be followed without any knowledge of calculus and has been used advantageously in numerous instances in American practice.

An important book in English was published in 1904 by C. F. Marsh, entitled, "Reinforced Concrete." It has now reached its third revised and enlarged edition. This book is also built on the encyclopedic style, containing among its 652 pages some 260 devoted in one form or another to the enumeration of various systems, structures erected and special methods in use, much of which could be left to trade publications. The 163 pages containing the chapter on "Experimental Research and Data Deduced Therefrom," and the appendix, on the contrary, is most valuable matter. It gives in a well-arranged and condensed form the most important tests on reinforced concrete the world over, and is of great value to anyone engaged in the study of the subject.

To the chapter on calculations, some 140 pages are devoted, and the author covers the subject thoroughly. It is quite of interest to state here, though this is a general review, that in the third edition of the book the author abandons the parabolic stress-strain

curve and adopts the straight-line for the concrete in compression in beams. He writes: "All things considered and after careful deliberation, it has been decided to assume a straight-line stress-strain curve for the deduction of the formulae given in the following. It is probable that some resistance is frequently offered by the concrete in tension up to the limit of the safe stresses allowed, but it has been deemed better to ignore such additional resistance and to allow it to increase the factor of safety. The formulae derived by the authors are practically identical with those sanctioned by the Prussian Government regulations and recommended by the Association of German Architects and Engineers. It has therefore the advantage of extensive use by designers in various countries."

Another book following the general outlines as laid down by Christophe is the French work of N. de Tedesco and A. Maurel, "Traité Théorique et Pratique de la Résistance des Matériaux Appliquée au Béton et au Ciment Armé." After enumerating the various theories proposed, the authors develop the general formulas and afterward simplify them for many special conditions. The engineer looking for formulas covering a special case or for simplifications of them will do well to look up this work.

Of quite a different class is Considère's "Reinforced Concrete," which consists of the published experimental researches of the well-known experimenter, arranged and translated in English by the writer. It is now in its enlarged second edition. It is intended to furnish the reader with the necessary knowledge on the resistance and elasticity of reinforced concrete. Of the same character, but much larger, is Feret's important work, "Etude Experimentale du Ciment Armé," wherein the author gives much valuable original experimental data, and based on them attempts to establish an exact theory of reinforced concrete. The book is an original contribution to the science of engineering.

The second edition of "Reinforced Concrete," by A. W. Buel and C. S. Hill, approaches more the character of a text-book than any other yet published. Half of the book is devoted to the part treating of Representative Structures; part I, to Methods of Calculation, which is arranged to "include all information required by the average designer for computing ordinary structures." This is done in a compact and precise form, based on sound, conservative practice. The chapter on arches is especially good, the author's experience fitting him well for it. The third part, that on Methods of Construction, contains much valuable practical information, especially for the beginner.

L. J. Mensch's "Architects' and Engineers' Handbook of Reinforced-Concrete Construction" is a handsomely printed and much illustrated book of more than 200 pages. It is devoted to the Hennebique system mainly and is rather a trade publication than an engineering book. It is of the propaganda type, demonstrating what reinforced concrete can do, but contains no engineering or scientific information which could be made use of.

The "Graphical Handbook for Reinforced-Concrete Design," by

J. Hawkesworth, contains 14 well-printed quarto tables, giving graphically all the information required for the design of beams, slabs and columns within a sufficient range. The tables for beams and slabs are all for the reinforcing on one side only, and the author assumes as the basis of his calculations that "no tensile resistance is offered by the concrete" and that the stress-strain curve is parabolic. The book will prove useful to busy engineers, especially for estimating and planning purposes, but whether, as stated in the preface, it will "render it unnecessary to call in expert assistance to solve the majority of problems ordinarily encountered" may much be doubted. Reinforced concrete has not yet reached the stage of automatic design where expert knowledge is superfluous. On the contrary, it needs it now more than ever.

The writer has confined himself entirely to reinforced-concrete books, omitting the much older subject of cement and concrete. As a knowledge of concrete is, however, essential to good design, the writer refers the reader to "Cements, Mortars and Concretes," by M. S. Falk; "Cement and Concrete," by L. C. Sabin, and the "Treatise on Concrete, Plain and Reinforced," by F. W. Taylor and S. E. Thompson.

From the above review it will be seen that the literature of reinforced concrete is comparatively very young, that much credit is due to the authors who undertook the difficult task to furnish compact and precise text-books to the engineering profession, and that there is a wide field open to engineering writers who wish to accomplish this task.

THE LITERATURE OF

CEMENT AND PLAIN AND REINFORCED CONCRETE

For purposes of easy reference and comparison, this list is divided into eight classes:

1. Books treating specially—almost exclusively—of Reinforced Concrete; design, construction, specifications and inspection.

2. Books treating of the materials, Cement and Concrete; their composition, manufacture and testing.

3. Books treating of special applications of Cement and Concrete.

4. Books treating specially of Concrete Blocks and Artificial Stone.

5. Books treating the subject in a general way: working rules, statistics, etc.

6. Books on other subjects, with more or less important references to Cement and Concrete.

7. French, German and other Foreign Books of importance (excepting English).

8. Trade Publications.

CLASS 1

REINFORCED CONCRETE

Design, Construction, Specifications, Inspection

REINFORCED CONCRETE. By A. W. Buel and C. S. Hill. Second Edition, Revised and Enlarged, (1906). Buckram, 6 × 9 ins.; xii+499 pages; 357 illus.; 8 fold. plates. Price, $5 net.

This was one of the first American books on reinforced concrete, the first edition being published in 1904, when the only literature on the subject consisted of scattered articles in technical periodicals. The demand for the book soon exhausted the issue, and called for the present edition, which was fully revised to meet the new developments in this class of construction and considerably enlarged by the addition of much material (results of important tests, etc.) of permanent value. It is a thorough and practical consideration of the subject and has, from its first publication, been regarded as the standard treatise for designing and constructing engineers following American practice and governed by the conditions which prevail in America.

Theoretical discussions have been omitted, and in their place have been supplied practical working formulas, examples of representative structures and records of actual practice in the selection of materials and methods of workmanship and construction.

For convenience of classification the book is divided into three parts or sections. Part I, containing 155 pages, derives or states and discusses formulas and methods of calculation for beams, columns, arches, retaining walls, conduits, etc., and gives experimental data on beams and columns. Part II, 196 pages, describes and illustrates forms and types of structures which have been erected and gives examples of American practice in design. Part III, 105 pages, describes the various forms of reinforcement and the methods of construction used in foundation work, building work, bridge work and conduit work, also gives information concerning the fabrication of the concrete itself. In this part special attention is given to the construction of centers and forms for concrete work and to methods of facing and finishing exposed concrete surfaces. The three appendices give data of tests of reinforced concrete beams and columns and a method of proportioning the ingredients in concretes.

"A double-column index, covering seven pages, makes ample provision for convenient reference to any topic treated in the volume. The book may properly be characterized as a standard work upon the subject, and no one engaged in the design or construction of reinforced concrete structures can afford to be without it." Prof. H. S. Jacoby in "The Engineering Digest," January, 1907.

"The book retains the excellent features of the first edition. The index is good. * * * The earlier edition was favorably received by engineers and the new edition ought to grow in favor. In the field it attempts to cover, this book should rank among the standard books and should continue to be of service to designer, to constructor and general reader." From Prof. Arthur N. Talbot's review of Second Edition in "Engineering News," Nov. 15, 1906.

(Circular containing full Table of Contents may be had on request.)

The Engineering News Book Department, New York City.

CONCRETE AND REINFORCED CONCRETE CONSTRUCTION. By Homer A. Reid, (1906). Cloth; 6 × 9 ins.; xviii + 884 pages, 715 illustrations. Price, $5.00 net.

"It has been the author's aim in the preparation of this book to make it * * * a complete treatise on the properties and uses of concrete and reinforced concrete, as applied to construction. The book is not only intended as a reference work for engineers, architects and contractors, but, it is believed, the treatment is sufficiently ample for the engineering student and general reader."—Preface.

"The book is divided into 34 chapters. The subject matter may be grouped as follows: Cement and its manufacture and tests, the aggregate, proportioning, mixing and placing concrete, cost of work, and finishing concrete surfaces, 132 pages; physical and elastic properties of concrete and steel, 85 pages; principles and styles of reinforcement, mechanical bond, curved pieces subject to flexure, and columns, walls and pipes, 53 pages; theory of flexure of beams and strength of columns with formulas and calculations, 136 pages; foundations, 58 pages; general building and construction matters, connected with practical construction, 142 pages; retaining walls, dams, conduits and sewers, tank and reservoir construction, chimneys, tunnels, etc., 144 pages; bridges, arches, piers and abutments, 104 pages; concrete building blocks, 20 pages.

"Although the title is 'Concrete and Reinforced Concrete,' it is evidently intended that the book shall treat mainly of reinforced concrete, and, therefore, the space given to constituent materials and to proportioning and fabrication is limited. Bearing in mind such limitation, it may be said that the selection of material for presentation is, for the most part, well made.

"An index covering ten pages seems to be fairly complete. * * * The general plan of the book is excellent, the proportioning of parts good, and the manner of presentation commendable. * * * The book as a whole is a valuable one, and deserves to rank among the standard works on the subject."—From Prof. Arthur N. Talbot's review in "Engineering News," March 14, 1907.

PRINCIPLES OF REINFORCED CONCRETE CONSTRUCTION. By Prof. F. E. Turneaure and Prof. E. R. Maurer, (1907). Cloth; 6 × 9 ins.; viii + 317 pages, 11 plates, and 130 figures. Price, $3.00 net.

The authors state that their purpose was "to cover in a systematic manner those principles of mechanics underlying the design of reinforced concrete, to present the results of all available tests that may aid in establishing coefficients and working stresses, and to give such illustrative material from actual designs as may be needed to make clear the principles involved." This task they have performed admirably. About three-quarters of the book is devoted to development of methods of design and the remainder to very condensed descriptions of recent American constructions in reinforced concrete. This book is one that should be in the library of every engineer.

Abstracted Review in "Engineering News," Dec. 12, 1907.

Titles of Chapters: Introductory (Historical Sketch—Use and Advantages of Reinforced Concrete); Properties of the Material; General Theory; Tests of Beams and Columns; Working Stresses and General Constructive Details; Formulas, Diagrams and Tables; Building Construction; Arches; Retaining Walls and Dams, Miscellaneous Structures.

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CONCRETE SYSTEM. By Frank B. Gilbreth, M. Am. Soc. M. E. Flexible Morocco; 8½ × 11 ins.; 184 pages; 220 illus.; 10 folding plates, giving details of construction, (1908). Price, $5.00 net.

This is quite a different type of literature from anything heretofore published. It is neither a text-book nor a treatise; it give no definition of concrete, no statement of its properties, no calculations or theoretical discussions; it assumes that the men for whom it is intended are familiar with concrete and construction in concrete before they ever see the book. It is a thoroughly practical book, partaking of the nature of a set of specifications, telling how to do the work systematically, expeditiously, economically and safely, and is one of the most valuable works ever published for the engineer or contractor dealing with concrete construction.

It is a very complete record of the experience of the author, and of the many men who have been associated with him, telling how concrete can be handled to realize the highest ideals—honest work at the lowest cost and at the highest speed consistent with honest work and safety.

The book is the outgrowth of the gradual accumulation of written experiences. When an order was issued or a caution given or when a certain way of doing a thing was fixed as the standard, then a written memorandum was made, and as the execution of successive jobs brought out new rules, they were added to the list. Finally, when the time came that new accessions to the rules were infrequent and entire large contracts were carried through without developing a new rule or changing a method, the whole collection was grouped in a classified arrangement, for readier reference and issued in book form.

The subject is divided into two parts: Rules and Instructions, and Progress Photographs. Part I consists of 13 chapters: General Outlines of the System; General Rules; Forms; Reinforcement; Mixing; Transportation; Concreting; Testing; Finishing; Cast Stone; Making, Jetting, and Driving Corrugated Concrete Piles; Directions for Making Waterproof Cellars; Fire Tests of Concrete Construction. Part II consists of pictorial accounts of the progress of two large concrete jobs successfully executed by the author's organization. In the Rules and Instructions has been included certain matter that should be kept before the eyes of employees—the accepted standards for testing cement; the most used specification for cement; a widely-known code of rules for conducting fire tests; a well-known municipal building regulation for reinforced concrete—all matter which easily justifies its presence the work. The rules are numbered consecutively and are well illustrated by photographs taken from actual work in progress. Reviewed in "Engineering News," Dec. 17, 1908.

PRACTICAL REINFORCED CONCRETE STANDARDS FOR THE DESIGNING OF REIFORCED CONCRETE BUILDINGS. By H. B. Andrews, M. Am. Soc. C. E., (1908). Cloth; 8 × 11½ ins.; 46 pages; illustrations and tables. Price, $2.00.

This book is intended principally for architects. It contains chapters on the design of beams, with tables and diagrams, and standardized sizes for buildings, together with sets of specifications for concrete work. Reviewed in "Engineering News," August 13, 1908.

REINFORCED CONCRETE. By A. Considère. Translated from the French by Leon S. Moisseiff. Second Edition, (1905). Cloth; 6 × 9 ins.; xii + 242 pages, 32 illus. Price, $2 net.

Contains the results and discussions of a series of tests on Reinforced Concrete conducted by the author.

Contents: 8 Chapters and 4 Appendices: Reinforced Concrete in Bending; Deformation and Testing of Reinforced Concrete Beams; Effects on Changes in Volume of Concrete; Tensile and Compressive Resistance of Reinforced Concrete; Resistance of Concrete to Shearing and Sliding; Effect of Cracks on Stresses and Deformations; Compressive Resistance of Reinforced and Hooped Concrete; Breaking Test of an Experimental Bridge.—Experiments by the French Commission on the Elasticity and Elongation of Reinforced Concrete.—The Ability of Reinforced Concrete to Sustain Great Elongation.—Effect of Lateral Pressure on Compressive Resistance of Solid Bodies.—An Analysis of the Compressive Resistance of Hooped Concrete.

"Few investigators have brought higher scientific attainments or greater skill in experimental research to the study of the behavior of reinforced concrete under stress than has Mr. Considère and in presenting the record of his labors to English-speaking engineers, Mr. Moisseiff has performed a most valuable service. The author's first results were published by him in 1898 in a paper entitled "The Influence of a Metal Reinforcement Upon the Properties of Mortars and Betons." This paper was followed by several others, the last of which was published in 1903. This book gives a compilation of these papers arranged so as to make one coherent treatise."—From Review in "Engineering News," January 14, 1904.

The present edition has been brought up-to-date with the addition of much new material.

REINFORCED CONCRETE.—A Manual of Practice. By Ernest McCullough, (1908). Cloth; 5 × 8 ins.; 128 pages; illustrated. Price, $1.50 net.

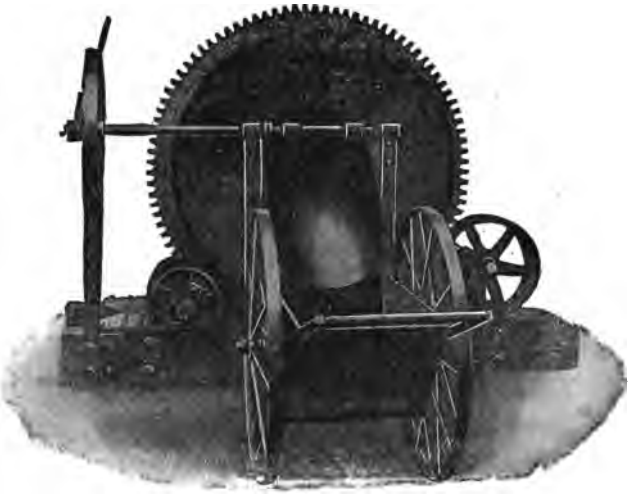
This book is purely a "manual of practice," and as such is as complete as its limited size admits. The author has had considerable experience in concrete design and construction and in this book has endeavored to place the fruits of that experience before the practical man who wishes to take up concrete work, mainly from the contractor's standpoint. The pages are full of useful hints as to methods, the kinds of tools to use, the personnel of the force, the conduct of the work, and form design and construction, all clearly and correctly stated.

The theoretical portion of the book is, however, not so satisfactorily presented, on account of the efforts of the author to carry simplification too far. In other ways the book is a good one, the tables for design are well presented, the practical advice given is useful, and the price is very moderate.

Reviewed in "Engineering News," August 13, 1908.

REINFORCED CONCRETE. By Walter Loring Webb and W. Herbert Gibson; 6 × 9 ins.; 150 pp., 140 illustrations. $1.00

This forms part of the American School of Correspondence Encyclopedia, and is issued also as a separate book. It is a brief treatment of the subject and a very fair book for a beginner, but does not enter into details sufficient to interest the reader with advanced knowledge, nor does it give any information that is not contained in the elementary portions of other books.



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REINFORCED CONCRETE. By Charles F. Marsh and William Dunn. Third Edition, (1906). 8 × 11 ins.; 660 pages, 617 illustrations. Price, $7.00.

This is an elaborate attempt to cover the field of reinforced concrete, and although of British origin, it draws its material from foreign sources, including much from the United States.

Part I gives a general review of the subject and discusses the advantages and disadvantages of reinforced concrete. Part II (90 pages) gives descriptions of fifty systems of reinforcement, partaking of the nature of a catalog. Part III (30 pages) is devoted to materials, their requirements, combination and economical considerations. Part IV (60 pages) describes and illustrates the processes involved in construction. Part V (50 pages) is devoted to Experimental Research and Data Deduced Therefrom, and gives results of investigations by Bach, Considère, Christophe, Hatt, Lanza and others. Part VI (150 pages) is devoted to Calculations. Part VII (95 pages) is made up principally of views of structures completed and uncompleted. The book closes with an Index of 15 pages.

The book is printed in large type, with wide margins and large illustrations. It is full of information and must be regarded rather as a record of methods and opinions than as a final authority on the subject. It will not appeal to the student unless he has already made some study of the subject. Engineers engaged in concrete work will find in it much of interest to them, though they may not agree with the methods recommended. Second Edition Reviewed in "Engineering News," Jan. 12, 1905.

MANUAL OF REINFORCED CONCRETE AND CONCRETE BLOCK CONSTRUCTION. By Charles F. Marsh and William Dunn, (1908). Morocco; 4 × 6½ inches; 290 pages; 113 illustrations. Price, $2.50 net.

Contents: Seven Parts—Materials; Construction; Waterproofing and Fire Resistance; Loads, Building Moments, etc.; Calculations; Hollow Concrete Blocks; Tables, Diagrams and General Information.

"The object has been to give in concise and handy form for every-day use, the methods employed for the solution of every-day problems, with the information most frequently required, in as condensed a form as possible consistent with a clear presentation of the subject"—Extract for Preface.

To this end the matter published in the extensive work on "Reinforced Concrete" by the same authors, some years ago, has been abridged and condensed, many tables and diagrams have been added, and the whole brought down to a hand-book style, in which the more involved discussions are omitted. A very good designing hand-book, valuable for the office man in reinforced concrete work. While an effort has been made to adopt it for American use, there are some cases where the transformation to American standards have been omitted, which makes its use a little confusing. Reviewed in "Engineering News," November 12, 1908.

HANDBOOK ON REINFORCED CONCRETE. By F. D. Warren. For Architects, Engineers and Contractors. Second Edition, Revised, (1907). Cloth; 5 × 7 ins.; 268 pages; many tables and diagrams. Price, $2.50 net.

CONCRETE CONSTRUCTION.—Methods and Costs. By Halbert P. Gillette, M. Am. Soc. C. E., and Chas. S. Hill, (1908). Cloth; 6 × 9¼ ins.; 690 pages; 306 illustrations and 37 tables. Price, $5.00 net.

"This book is a treatise on the methods and cost of concrete construction. No attempt has been made to present the subject of cement testing . . . nor to discuss the physical properties of cements and concrete . . . nor to consider reinforced-concrete design . . . not to present a general treatise on cements, mortars and concrete construction . . . On the contrary, the authors have handled the subject of concrete construction solely from the viewpoint of the builder of concrete structures." Extract from Preface.

With this purpose in view, the authors have collected from the technical press and from technical society papers and largely from their own personal investigation, a vast number of examples of concrete work. These are presented in concise form, with the unimportant details removed; there is an attempt to preserve a certain uniformity of treatment, so as to permit comparison between similar constructions. In addition to these specific examples the authors have added, in connection with every branch of work, general instructions deduced from observation and formulas for quantity and cost estimates.

The following is the list of chapter headings, nearly all of which are prefaced with the words "Methods and Cost of": Selecting and Preparing Materials for Concrete; Theory and Practice of Proportioning Concrete; Making and Placing Concrete by Hand and by Machine; Depositing Concrete Under Water; Making and Using Rubble and Asphaltic Concrete; Laying Concrete in Freezing Weather; Finishing Concrete Surfaces; Form Construction; Concrete Pile and Pier Construction; Heavy Concrete Work in Foundations; Locks, Dams, Breakwaters and Piers; Constructig Bridge Piers and Abutments; Constructing Retaining Walls; Constructing Concrete Foundations for Pavement; Lining Tunnels and Subways; Constructing Arch and Girder Bridges; Culvert Construction; Reinforced-Concrete Building Construction; Aqueduct and Sewer Construction; Constructing Reservoirs and Tanks; Constructing Ornamental Work and Waterproofing Concrete Structures.

The material of this book has been compiled with more care than is usual in compilations, and much original matter has been added, so that the value of the work has not been marred by mere statistical matter as is that of the majority of compilations. It is a book that should be in the library of every engineer and contractor. Reviewed in "Engineering News," June 11, 1908.

ARCHITECTS' AND ENGINEERS' HANDBOOK OF REINFORCED CONCRETE CONSTRUCTION. By L. J. Mensch, (1904). 5¼ × 7½ ins.; 217 pages, 172 illustrations and many tables. Price, $2.00.

When this handbook was originally published by the author, in 1904, he announced that he would distribute copies gratis to clients or responsible persons intending to become his clients, and that it would be sent on receipt of price to persons wishing information for their own work. Judged as a trade publication, the work is a good one, but as a technical work for engineers, it can hardly be considered so favorably, as the treatment of the subject is partisan and incomplete. Reviewed in "Engineering News," March 17, 1904.

ENGINEERS' POCKETBOOK OF REINFORCED CONCRETE. By E. Lee Heidenreich, M. Am. Inst. M. E., (1908). Flexible leather; 4½ × 6¾ ins.; 364 pages; 164 illustrations. Price, $3.00 net.

This is the most satisfactory of the handbooks yet published for reinforced concrete work, largely because the author seems to realize the constantly changing standards of the industry, and offers his book as a more or less comprehensive view of the present stage, to be revised with the development of the art. While no handbook can be called complete, Mr. Heidenreich has a fair selection of material, which together with compactness, good arrangement and clearness, makes a valuable reference work.

The chapter headings are: Material and Machines; Design and Construction of Buildings; Design and Construction of Bridges; Abutments and Retaining Walls; Culverts, Conduits, Sewers; Pipes and Dams; Tanks, Reservoirs, Bins and Grain Elevators; Chimneys, Miscellaneous Data, Cost Keeping, Estimating, Specifications, Etc. The chapters on Buildings and on Pipes, Culverts and Sewers are by far the best, as the author seems to have had most of his experience in these works, but the chapter on bridges treats only of the elastic arch and is rather unsatisfactory and incomplete.

Reviewed in "Engineering News," January 14, 1909.

CONCRETE STEEL. A treatise on the theory and practice of reinforced concrete construction. By W. N. Twelvetrees; 5 × 7½ ins.; 230 pages, 73 illustrations. Price, $1.90.

The Author has well carried out a purpose of preserving a strict continuity of treatment, commencing with the physical properties of concrete and steel and the effect of their joint action, then discussing the principles underlying the theory of concrete-steel, following with the rules necessary for correct design and for the calculation of strength, and with practical examples for each of the chief types of members employed in reinforced concrete construction. The titles of the chapters are: Concrete; Steel; The General Theory of Concrete-Steel Beams; The Design of Beams; Shearing Stresses in Beams; Braced Girders; Typical Forms of Beam Design; Floor Design; Working Stresses and Building Rules for Beams and Floors; Foundations; Concrete-Steel Columns. As a handbook of principles, the book has merit, but some of the nomenclature and methods of analysis, being designed specially for the British engineer may seem unfamiliar to Americans.

Abstracted from Review in "Engineering News," Sept. 14, 1905.

PRACTICAL HINTS FOR CONCRETE CONSTRUCTORS. By W. J. Douglas, Engineer of Bridges for the District of Columbia. Paper; 4½ × 7 ins.; 60 pages; 3 illustrations; folding plate. Price, 25 cents.

A reprint from "Engineering News" of two articles containing much valuable information for every man dealing with concrete.

EXPANSION AND CONTRACTION IN CONCRETE STRUCTURES. By L. F. Bellinger and H. C. Lewerenz. Reprinted from "Engineering News." Paper; 4½ × 7 ins.; 32 pages; 4 illustrations; folding plate. Price, 25 cents.

CONCRETE. By Edward Godfrey, (1908). Flexible leather; 3¾ × 6¾; 448 pages; many illustrations. Price, 2,50 net.

The greater part of this book is made up of articles contributed by the author during the past two years to the technical press. This reproduced matter has been taken bodily from the original and set down in the order of appearance, together with a detailed correspondence upon disputed points.

The book starts with a chapter headed "A Survey of the Field of Concrete Design and Construction, in which will be found some Theses," which is a rapid survey of the scheme of the book. This is followed by a short treatment of the materials which go to make up concrete structures, and the methods of handling, finishing and constructing the concrete. Some cost figures are then given, but the conditions under which the work was carried out are omitted.

Following this portion are reprints of articles from "Engineering News"—"The Design of Concrete-Steel Beams and Slabs"; "Design of Reinforced-Concrete Columns and Footings," and "Design of Reinforced-Concrete Retaining Walls." Also the following articles reprinted from "Concrete Engineering"—"Reinforced-Concrete Engineering in the Making"; "Design of Reinforced-Concrete Beams and Slabs"; "Design of Reinforced-Concrete Arches"; "Design of Foundation"; "Sheer of Concrete and Its Bearing on the Design of Beams"; "Design of Reinforced-Concrete Columns"; "Design of Dams"; "Design of Reinforced-Concrete Chimneys," and "Design of Domes, Vaults and Conical Coverings."

The book is completed by some thirty pages of cuts illustrating various concrete structures. The author calls attention to the fact that there is some repetition in the articles from the two periodicals mentioned.

Reviewed in "Engineering News," May 14, 1908, and commented on in issue of June 11, 1908.

GRAPHICAL HANDBOOK FOR REINFORCED CONCRETE DESIGN. By John Hawkesworth, C. E., (1907). Quarto. 70 pages, 15 large folding plates. Price, $2.50.

This book contains 15 plates of diagrams for use in determining the size and the amount of reinforcement for floors, beams and columns of reinforced concrete construction. These diagrams give the safe resisting moment of beams with percentages of reinforcing up to 3%, the resisting moment of slabs of different thicknesses reinforced in one direction, the bending moment in pier footings, the resisting moment of beams and slabs of depths up to 21 inches, position of the neutral axis, shearing resistance of beams, allowable loads on columns with longitudinal steel reinforcement of various percentages, loads on hooped columns, various graphical multiplication tables, and a design of a reinforced concrete structure. The Appendix gives the derivation of the formulas for rectangular beams and T-beams, for columns with longitudinal reinforcement, and for hooped columns, and also the requirements of the building code of New York City in regard to reinforced concrete.

The plates are 7 × 9 inches in size, with five folding plates double this size. The diagrams are well executed, clear and conveniently arranged for use, and the explanations and examples which accompany them are clear and to the point. The scale is sufficiently large for office use. Reviewed in "Engineering News," May 16, 1907.

MONIER CONSTRUCTIONS. By E. L. Heidenreich, (1906). Price, 50 cents.

BRAYTON-STANDARDS FOR THE UNIFORM DESIGN OF REINFORCED CONCRETE. By Louis F. Brayton. Second Edition, (1906). Leather, pocketbook size; 110 pages, illustrated. Price, $3.00.

This little handbook of reinforced concrete building design is in convenient form for office use. It contains about twenty tables of bending moments and moments of resistance of reinforced concrete slabs and beams, strength of reinforced concrete columns, weight of rods, amount of materials for making concrete, etc., together with cuts showing forms and types of design for building construction, and explanations of tables and calculations.

The book has some defects, principally in its literary form and typographical appearance. Reviewed in "Engineering News," Aug. 16, 1906.

GENERAL SPECIFICATIONS FOR CONCRETE WORK—AS APPLIED TO BUILDING CONSTRUCTION. By Wilbur J. Watson, (1908). Stiff paper; 6¾ × 9½ ins.; 46 pages. Price, 50 cents.

These specifications are modeled on the line of the regulations for concrete work which have been passed by many cities, but they take in a somewhat broader field than any city regulations heretofore adopted. Reviewed in "Engineering News," Feb. 20, 1908. See page 23.

CONCRETE-STEEL CONSTRUCTION (Der Eisenbetonbau). By Prof. Emil Mörsch. Authorized Translation of Third Edition (1908) of "Der Eisenbetonbau," by E. P. Goodrich, C. E. (see page 49). In press—ready about September, 1909.

THEORY OF STEEL-CONCRETE ARCHES AND OF VAULTED STRUCTURES. By William Cain. Boards; 4 × 6 ins.; 215 pages; illustrated. Price, 50 cents.

MENSCH: THE REINFORCED CONCRETE POCKETBOOK. By L. J. Mensch, M. Am. Soc. C. E. (1909). Leather pocketbook size; 216 pages; illustrated. Write Engineering News Book Department for further details.

Contains useful tables, rules and illustrations for convenient design, rational construction and ready computation of cost of reinforced concrete girders, slabs, footings, columns, buildings, retaining walls, tanks, grain elevators, coal bins, water pipes, sewers, dams, bridges, smokestacks, etc.

THE USE OF CONCRETE IN ROAD BUILDING. The Engineering News Book Department has in preparation (June, 1909) a pamphlet on "NOTES ON THE LITERATURE OF ROADS, STREETS AND PAVEMENTS," with list of books on allied subjects. This will be sent to any address in the world on receipt of five cents to cover cost of mailing.

The Engineering News Book Department, New York City.

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CLASS 2

CEMENT, CONCRETE AND MORTARS

Composition, Manufacture, Testing

CEMENT AND CONCRETE. By Louis C. Sabin., B. S., C. E., M. Am. Soc. C. E., Second Edition (1905). Cloth; 5¾ × 9¼ ins.; xi + 572 pages; 15 illustrations; 161 tables of tests. Price, $5.00 net.

Divided into four Parts Treating of: Cement—Classification and Manufacture; Properties of Cement and Method of Testing; Preparation and Properties of Mortar and Concrete; Use of Mortar and Concrete. Does not deal with concrete construction in detail, but treats of the application of Mortar and Concrete to practical construction, explaining its use in buildings, walks, floors, pavements, sewers, subways, reservoirs, bridges, dams, locks and breakwaters. Gives valuable data regarding cost of sand, Portland and Natural cement mortars, aggregates, etc.; also a chapter on the manufacture and use of concrete building blocks.

A resume of the review of this book in "Engineering News" of April 13, 1905, is given below in combination with the review of Taylor and Thompson's "Treatise on Concrete." The Second Edition was reviewed in "Engineering News" of July 18, 1907, from which the following is quoted:

"There is a distinction to be made in concrete literature between text-books on materials and those on construction. Necessarily each contains some of the important points which rightly come under the other subhead but only in such a way as to give impressions which may be enlarged and confirmed by the other book. . . . Mr. Sabin's book is distinctly of the former class, for in it construction plays a subordinate part to the material.

"The second edition has been enlarged from 507 to 572 pages, two pages of which have been added to the chapter "Definitions and Constituents," 12 pages to the chapter on "Manufacture" and the remainder to a new chapter on "Concrete Building Blocks" and to three appendices giving standard specifications for cement.

"The book as it now stands is an admirable treatise on concrete as a material, but must be taken in connection with some reference book of design and construction to make a complete survey of the field of what may be called concrete engineering."

TREATISE ON CONCRETE, PLAIN AND REINFORCED. By Frederick W. Taylor and Sanford E. Thompson (1905). Cloth; 6 × 9 ins.; xvii + 585 pages; 172 illustrations; many tables. Price, $5.00

"This treatise is designed for practising engineers and contractors, and also for a text and reference book on concrete for engineering students"—Preface. It deals with materials, construction and design of concrete and reinforced concrete, with chapters on "The Effect of Sea-water on Concrete and Mortar" by R. Feret; "Proportioning Concrete" by Wm. B. Fuller and "Chemistry of Hydraulic Cements", by Spencer B. Newberry.

Among other contents are Outline of the Process of Concreting; Concrete Data; Specifications; Choice of Cement; Classification of Cements; Standard Cement Tests; Special Tests of

Cement and Mortar; Strength and Composition of Cement Mortars; Voids and other Characteristics of Concrete Aggregates; Tables of Quantities of Materials for Concrete and Mortar; Strength of Plain Concrete; Reinforced Concrete; Preparations of Materials for Concrete; Mixing Concrete; Depositing Concrete; Laying Concrete and Mortar in Freezing Weather; Water Tightness; Fire and Rust Protection; Sidewalks, Building, Construction, Foundations and Piers; Dams and Retaining Walls; Arches, Tunnels and Conduits; Reservoirs and Tanks; Cement Manufacture; References to Concrete Literature.

These two books—Sabin and Taylor and Thompson were published about the same time and were reviewed together in Engineering News, of April 13, 1905, from which the following extracts are made:

"Both are general treatises on cement and cement products—mortar and concrete, and both lay claim to unusual research and endeavor to bring before engineers the latest knowledge concerning the uses and properties of hydraulic cements. . . .

"Mr. Sabin's book elaborates the subject of cement testing and the properties of cements while Mr. Thompson's gives first place to the manufacture and uses of concrete, its composition, mixing, physical properties and placing.

"In both books the chapters on chemical analysis and composition are satisfactory in their statements of the component ingredients of cement and the roles played by them, and that by Mr. Newberry is particularly interesting for its discussion of rules for proportioning the ingredients in Portland cement manufacture. Neither book presents methods for chemical analysis or discusses adequately the constitution of cements.

"In discussing the physical tests of cements, Mr. Sabin's book leads in the extent and in the value of the matter presented. The field covered by the two books is about the same and includes tests for density, fineness, activity, cohesion, shear, abrasion, compressive strength, etc.

"In those chapters in which the methods and costs of making concrete are given, so far as the mere text is concerned there is little to choose between the two books; Sabin being, however, more concise, but not so satisfactory as Taylor and Thompson on the fabrication of concrete.

"These two books are the most comprehensive reference books in the subject of plain concrete construction. . . . They contain in convenient form much of the valuable matter that has appeared in periodicals and transactions during the past fifteen years."

STANDARD METHODS OF TESTING AND SPECIFICATIONS FOR CEMENT. Edited by the Secretary, under direction of Committee on Standard Specifications for Cement of The American Society for Testing Materials. Paper; 6 × 9 ins.; pp. 32; 5 figs. May be obtained from the Secretary, Richard L. Humphrey, Harrison Bldg., Philadelphia, Pa.

This pamphlet contains the latest reports of the Committees on (1) Uniform Tests of Cement; (2) Standard Specifications for Cement, and (3) Uniformity in Methods of Chemical Analysis for Limestones, Raw Materials and Portland Cements. These Committees were appointed respectively by The American Society of Civil Engineers; the American Society for Testing Materials and the New York Section of the Society for Chemical Industry.

PRACTICAL CEMENT TESTING. By W. Purves Taylor (1905). Cloth; 6 × 9½ ins.; 320 Pages; 142 Illus.; 58 Tables. Price, $3.00 net.

This book covers a new field in the literature of cement testing, and is designed for the practicing engineer and builder, and not for the scientific investigator. In the great majority of books on cements, the chapters on testing are incomplete, and fail to supply detailed rules or instructions which can be followed with reasonable certainty of success.

In this book, with the exception of the chapter on "Classification and Statistics," and the one on "Cement Manufacture" comprising together barely 30 pages, the entire book is devoted to the discussion and description of methods of cement testing.

The tests considered are those employed in ordinary routine work to determine whether a particular shipment of cement is of a quality sufficiently good for construction work. Research or experimental tests are only incidentally considered.

The ordinary methods of shipping cement are described and directions are given for preventing rebagging inferior cement and the return of rejected material to the work. Methods of storage are briefly described, directions are given as to the items to be determined and as to what defects may be considered a reasonable cause for rejection. The selection of samples for future testing is considered, the number of samples to be taken is stated for different circumstances and the method of securing the samples, of transporting them to the laboratory, with the various apparatus required, are described.

In the section devoted to testing methods, the author describes the purpose of routine tests and defines the requisites for accurate and efficient work. Then follow descriptions of tests for specific gravity, fineness, time of setting, tensile strength and soundness. In each case, the author first defines the test and explains its purpose; he follows this with a statement of the various conditions affecting the property being determined; then the manner of mixing and moulding or otherwise preparing the test specimen is described, together with the apparatus used.

The actual test act is then described in detail, with the apparatus used and the various sources of error are cited and explained and instructions are given for the interpretation of the results.

There is a chapter on chemical analysis; one on special tests; one on approximate tests, and one on the equipment, organization and practical operation of a cement testing laboratory. The closing chapter discusses specifications for cement and is followed by appendices giving various standard cement specifications.

The book is a valuable one for cement testers and all others interested in seeing that cement conforms with the best standards of the day.

Condensed from Review in "Engineering News," Jan. 18, 1906.

HARDENING PROCESS OF HYDRAULIC CEMENTS. By W. Michaelis, Sr. Reprint of a paper read at the Thirtieth Annual Meeting of the German Portland Cement Manufacturers' Association, at Berlin, Feb., 1907. Paper; 29 pages. Price, 50 cents.

CEMENTS, LIMES, AND PLASTERS; Their Materials, Manufacture and Properties. By Edwin C. Eckel, C. E., (1905). Cloth; 6 × 9 ins.; 712 pages; 165 illus.; and 254 tables. Price, $6.00 net.

This book is essentially a treatise on the technology of cement manufacture, including the various lime products and plasters, as well as true hydraulic cements. It is a thoroughly American book, foreign materials and foreign practice being made supplementary to American throughout.

The author divides cementing materials into two groups: (1) simple cementing materials, including plasters, lime, and magnesia; (2) complex cementing materials, including the hydraulic limes and cements and oxychloride cements. This classification is explained in sufficient detail to establish the reason for making it. Some space is devoted to presenting chemical and physical data, such as atomic weights, chemical compounds, heat units and metric conversion tables, employed in the discussion of cementing materials.

The first five chapters of the book are devoted to the cementing materials (plasters) made from gypsum, taking up first the composition, distribution, and mining of the raw material, and following with chapters on the manufacture of the various plasters, on their properties, and on the statistics of the gypsum and plaster industries.

The second broad division of the subject includes limes and lime products—hydrated lime and lime-sand brick. There are discussed in turn, the origin, composition, varieties and chemical and physical compositions of limestones; the process of lime burning; the chemical and physical properties of lime and lime mortars; the production and use of magnesia. Three chapters are devoted to European hydraulic limes; six to natural cements; followed by chapters on American and European raw materials; manufacture; the chemical and physical properties of natural cements, and a number of typical specifications for such cements.

Nineteen chapters are devoted to Portland Cements; five to Puzzolan Cements, dealing with the raw materials, manufacturing processes, composition and properties, and slag bricks and slag blocks.

There is a bibliography of books and papers relating to the subject accompanying each chapter.

Condensed from Review in "Engineering News" Oct. 12, 1905.

THE USES OF HYDRAULIC CEMENT. By Frank H. Eno. Geological Survey of Ohio. Columbus, O. (1904). Public Document. Paper; 6½ × 10 ins.; 260 pages; tables and 157 figures.

Consists of six chapters: Brief History of Cement; Uses of Cement in Mortars; Uses of Cement in Concrete; Uses of Cement in Reinforced Concrete; Specifications for Cement Materials; Machinery and Tools.

The general method of treatment has been to give in each chapter a list of uses and to explain each by descriptions and illustrations of representative works. The collection is rather miscellaneous in character, but satisfies the purpose of acquainting the general public with the wide possibilities of cement in all classes of construction.

Reviewed in "Engineering News", Nov. 17, 1904.

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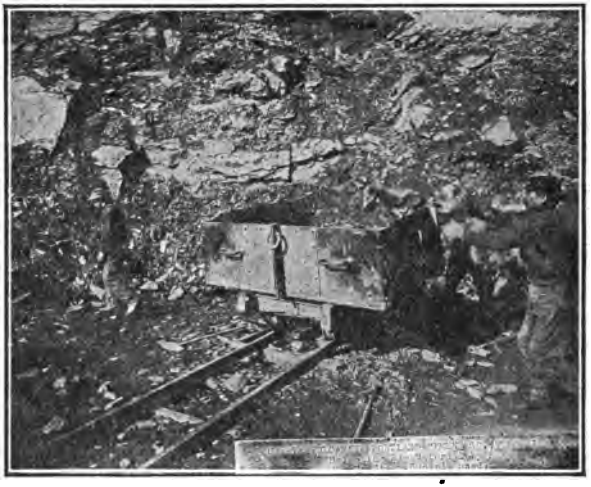

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The following Pamphlets by Albert Moyer, Assoc. Am. Soc. C. E., for gratuitous distribution

Berkshire Pamphlet No. 1: Specifications for using White Portland Cement Mortar.

Pamphlet No. 4: Hair Cracks and Crazing.

Pamphlet No. 6: Economical Selection and Proportion of Aggregates.

Pamphlet No. 7: Cement Sidewalk Paving.

Pamphlet No. 8: Artistic Concrete Residence.

EXPERIMENTAL RESEARCHES ON THE CONSTITUTION OF HYDRAULIC MORTARS. By Henri Le Chatelier. Translated from the original by Joseph L. Mack (1905). Cloth; 6 × 8¼ ins.; 132 pages; one plate and 2 text figures. Price, $2.00. French Edition, Paris, Second Edition; Paper; 6½ × 10 ins.; 196 pages.

In a thesis for his doctorate presented to the Faculty of Sciences of Paris in 1887, M. H. Le Chatelier gave the results of a study, from a chemical and mineralogical point of view, of the various combinations of lime, silica and alumina; determined their character, and, finally, endeavored to recognize the presence of one or another of them in hydraulic cement. In 1893 these original studies were supplemented by a second set of experiments and these two communications gave the first exact knowledge concerning the constitution of Portland cement. This book is composed principally of a reprint of these papers. Since the original publication in 1893, the constitution of Portland cement has been studied extensively with the result that some of the conclusions reached by Le Chatelier have been disproved and others have been corroborated, so that now they are far from being the absolute authority that they once seemed to be. As a record of the first widely accepted theory of the constitution of hydraulic cements and of the methods by which this theory was arrived at, this book is of wide interest. In addition to the main subject, it contains summaries of the results of investigations regarding the roles played in cements by chloride of calcium, sulphate of lime and magnesia; studies relating to accelerated tests, expansion during setting and hardening and disintegration by sea-water—From review in "Engineering News," Feb. 16, 1905.

So far as the translation is concerned, it is authorized and has been satisfactorily done.

PORTLAND CEMENT—Its Composition, Raw Materials, Manufacture, Testing and Analysis. By Richard K. Meade, (1906). Cloth; 5¾ × 9¼ ins.; 385 pages; 100 illustrations and 49 tables. Price, $3.50.

Fairly represents the American Portland cement industry, as seen from the standpoint of the technical staff. It is a valuable work for anyone having to deal with cements and should find a place in every cement laboratory and in the hands of every chemist studying this subject. The titles of chapters are: INTRODUCTION—History of the Development of the American Portland Cement Industry; Chemical Composition of Portland Cement. MANUFACTURE—Raw Materials, Proportioning the Raw Materials; Quarrying, Excavation, Drying and Mixing the Raw Materials; Grinding the Raw Material and Grinding Machinery; Kilns and Burning; Cooling and Grinding the Clinker, Storing and Packing the Cement, Etc. ANALYTICAL METHODS—The Analysis of Cement; The Analysis of Cement Mixtures, Slurry, Etc.; The Analysis of the Raw Material. PHYSICAL TESTING—The Inspection of Cement; Specific Gravity; Fineness; Time of Setting; Tensile Strength; Soundness. MISCELLANEOUS—The Detection of Adulteration in Portland Cement; Trial Burnings. APPENDIX—Tables of Atomic Weights, Factors, Conversion, for Use with Permanganate in Lime Determinations.

Reviewed in "Engineering News," Jan. 17, 1907.

CEMENTS, MORTARS AND CONCRETES, Their Physical Properties. By Myron S. Falk, Ph.D., (1904). Cloth; 6 x 9 ins.; pp. 176; tables, plates and figures. Price, $2.50 net.

The purpose of this book is to present in compact form the best of the numerous scattered results of tests and studies of the physical properties of cements, mortars and concrete. It has been compiled with a good knowledge of what is best in the field and the author gives in all cases references to the sources of his information, which will enable the reader to consult the original results if desired.

Chapters: Chemical Properties of Cement; Physical Properties of Cement; General Physical Properties; Elastic Properties in General; Tensile Properties; Compressive Properties; Flexural Properties. Appendix I.: Report on Uniform Tests of Cement by the Special Committee of the Am. Soc. C. E. Appendix II.: Constitution of Cement.

Reviewed in "Engineering News, Oct. 13, 1904.

A HANDBOOK FOR CEMENT WORKS CHEMISTS.—By Frank B. Gatehouse, F. C. S., (1908). Cloth; 6 × 9 ins.; viii. + 141 pages; illustrated. Price, $1.75 net.

This work is primarily intended for the use of chemists in cement works. The author's aim has been to keep the text within reasonable limits, by including only the essential details of manipulation where this was possible without ambiguity. In the first chapter the various chemicals and apparatus required are scheduled, and a list of books consulted in the preparation of the text is given. Chapter II. is devoted to descriptions of the methods employed in the analysis of the raw materials used in cement manufacture. In the succeeding chapter the calculations required to properly proportion the raw materials are stated. Chapter IV. takes up the analysis of fuels and the determination of their calorific values; the analysis and testing of lubricants; water analysis, and methods of softening; analysis of gases, with especial reference to kiln gases. The final chapter is devoted to a study of the methods used in analyzing cements. An appendix of 28 pages contains directions for making up solutions, the various physical and chemical tables required for reference, typical analyses of chalk, limestones, clays, shale, slag, and cements, together with useful data for the testing room.

CALCAREOUS CEMENTS; Their Nature, Manufacture, and Uses, with some observations upon cement testing. By Gilbert R. Redgrave, Assoc. Inst. C. E. and Chas. Spackman, F. R. S. Second and Revised Edition, (1905). Cloth; 6½ × 9 ins.; 310 pages; tables and 63 figures in text. Price, America, $4.50; England, 15 Shillings.

Noteworthy for its discussion of cement manufacture, to which over one-third of the book is devoted. In this feature and in the sections devoted to composition, chemical analysis and constitution, and in its historical notes on the development and early manufacture of hydraulic cements, this book is especially valuable and can be most highly recommended. On the subject of cement testing it falls far behind the recent American books on cement and cement products, and it does not consider at all fully the manufacture and properties of mortars and concrete. Condensed from Review in "Engineering News," June 15, 1905.

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CEMENT LABORATORY MANUAL.—A Manual of Instructions for the Use of Students in Cement Laboratory Practice. By L. A. Waterbury, (1908). Cloth; 4¾ × 7½ ins.; 122 pages; 28 illustrations. Price, $1.00 net.

As indicated by the sub-title, this book is designed for the instruction of students in the methods of procedure in the cement laboratory and it applies to actual cement testing only so far as such preliminary study takes up the problems of commercial testing. The details of equipment are so well treated that as a guide for establishing and administration of an instructing laboratory, the manual should prove most useful and the outlines of experiments are so prescribed that it should be equally valuable as a text-book.

Reviewed in "Engineering News," Dec. 17, 1908.

CONCRETE—Its Uses in Building, from Foundations to Finish. By Thomas Potter. (Third Edition, Revised and Enlarged, 1908). Cloth; 5½ × 8¾ ins.; 328 pages; 138 illustrations. Price, $3.00 net.

The first edition of this book was published early in 1877 and many of the processes and systems described in the present edition are retained from that time. In addition, the history of the use of concrete in ancient times and more particularly in England the middle of the last century is very complete. The author is a builder of some 40 years' standing and during that time has used concrete in the construction of buildings, both in blocks and in solid continuous walls, in the description of which the book is very good. The principal value of the book is for the small builder of straight concrete work. From review in "Engineering News," January 14, 1909.

HYDRAULIC CEMENT—Its Properties, Testing and Use. By Frederick P. Spalding, M. Am. Soc. C. E., (Second Edition, 1906). Cloth; 5 × 7 ins.; 300 pages; 34 illustrations. Price, $2.00.

This work embodies the results of a careful study of the nature and properties of hydraulic cement, and the various methods which have been proposed, or are in use, for testing cement. There are nine chapters: Hydraulic Lime; Classification and Constitution of Cement; the Setting and Hardening of Cement; the Soundness of Cement; Methods of Testing Cement; Tests for the Strength of Mortar; Tests for Soundness; Special Tests; Cement, Mortar and Concrete, and an Appendix giving Specifications for the Reception of Cement.

PORTLAND CEMENT—ITS MANUFACTURE, TESTING AND USE. By D. B. Butler. (1905.) Second Edition, Revised. Cloth; 5½ × 8¾ ins.; 406 pages; 97 illustrations. Price, $5.00, net.

Contents: Manufacture of Portland Cement (Introductory—Raw Materials—Wet Mills—Drying Floors and Kilns—Dry Mills and Warehouses—Dry Process); The Testing of Portland Cement (Introductory—Soundness—Fineness—Tensile Strength—Setting Properties—Weight, Specific Gravity, Color—Chemical Composition—Adulteration—Specifications); Use of Portland Cement (Importance of Maturing Before Use—Selection, Cleanliness, and Proportioning of Aggregates—Effect of Extremes of Temperature—Sea Water and Cement—General Remarks); Appendix (Useful Memoranda for the Testing Room—Analyses of Sundry Raw Materials—British Standard Specifications for Portland Cement—German Standard Specification and Rules for Testing—French Government Specification); Index.

CONCRETE. By John Black. 94 pages; illustrated. Price, 25 cents.

LIMES, CEMENTS, MORTARS, CONCRETES, ETC. By G. R. Burnell. 136 pages. Price, 60 cents.

MORTARS AND CONCRETES OF ANTIQUITY AND MODERN TIMES. By Adolph Cluss. Reprint of a paper read at the twenty-second annual convention of the Amer. Institute of Architects. Price, 25 cents.

ARCHITECTS' HANDBOOK ON CEMENTS. By A. H. Clarke. 96 pages. Price, $1.00.

PORTLAND CEMENT FOR USERS. By (late) Henry Faija. Fifth Edition, Revised by B. D. Butler, A. M. Inst. C. E. Cloth; 5 × 8 ins.; 110 pages; illustrated. Price, $1.20.

THE CEMENT INDUSTRY.—Description of Portland and national cement plants in the United States and Europe, with notes on materials and processes in Portland cement manufacture (1903). 235 pages; 132 illustrations. Price, $3 net.

CONCRETES, CEMENTS, MORTARS, PLASTERS AND STUCCOS; HOW TO MAKE AND HOW TO USE THEM. By Fred T. Hodgson. Cloth; 4 × 7 ins.; 520 pages; illustrated. Price, $1.50.

CONCRETE; ITS NATURE AND USES. By G. L. Sutcliffe. Second Edition, Revised and Enlarged, (1893). Cloth; 5 × 8 ins.; 396 pages; 58 illustrations. Price, $3.50.

THE CONSTITUTION OF HYDRAULIC CEMENTS. By S. B. Newberry. 24 pages. Price, 50 cents.

NOTES ON THE TESTING AND USE OF HYDRAULIC CEMENT. By Fred P. Sutcliffe. 376 pages; 66 illustrations. Price, $1.00.

PRACTICAL TREATISE ON LIMES, HYDRAULIC CEMENTS AND MORTARS. By Q. A. Gillmore. Eleventh Edition. Cloth; 6 × 10 ins.; 334 pages; 56 illustrations. Price, $4.00, net.

LIME, MORTAR AND CEMENT—THEIR COMPOSITION AND ANALYSIS. By A. J. Dibdin, (1901). 227 pages. Price, $2.00.

PORTLAND CEMENT. By A. C. Davis. Cloth; 138 pages; illustrated. Price, $2.00.

MANUFACTURE OF PORTLAND CEMENT IN THE UNITED STATES. By Emil Mueller. Cloth; 54 pages; illustrated. Price, $2.00.

AMERICAN ENGINEERING PRACTICE IN THE CONSTRUCTION OF ROTARY PORTLAND CEMENT PLANTS. By B. B. Lathbury and C. Spackman, (1902). Cloth; 6 × 9 ins.; 215 pages; illustrated. Price, $2.00.

Contains text in English, German and French in parallel columns.

CRUSHED STONE AND ITS USES—FACTS OF IMPORTANCE IN CONNECTION WITH MODERN CONCRETE CONSTRUCTION. Compiled by W. J. Jackman, (1904). Cloth; 6 × 9 ins.; 119 pages; illustrated. Price, $1.00.

BIBLIOGRAPHY.

AGE OF CEMENT: List of Public Documents on Production and Use of Cement for sale by Superintendent of Documents, (1907). Leaflet No. 5. Sent free on application to Superintendent of Documents, Washington, D. C.

CLASS 3

SPECIAL APPLICATIONS

of Cement and Concrete

CONCRETE STEEL BUILDINGS. Being a companion volume to the treatise in "Concrete-Steel." By W. Noble Twelvetrees. Cloth; 5 × 7½ ins.; 408 pages; 331 illustrations. Price, $3.25 net.

In this book no attempt is made to explain the theory of design but it contains very complete descriptions of the details of design and construction of various buildings in reinforced concrete which have been built in Europe and America. It is well illustrated with numerous drawings and photographs. The selection of examples has been carefully made, and includes nine terminals and store houses; nine factory buildings; eight office buildings; four higher structures, such as churches, theatres, etc., and three coal bunkers and silos. In addition, six reinforced concrete failures are noted, together with lessons to be learned from their poor design or construction. Most of the works described have been erected in England or the Continent; the few American examples are of buildings, well known to engineers and very fully treated in American periodicals.

Altogether the book presents a very satisfactory compilation of work executed in this type of construction, but is no more than a compilation and lays claim to the inclusion of very little original matter. Reviewed in "Engineering News," Aug. 15, '07.

REINFORCED CONCRETE IN FACTORY CONSTRUCTION. By Sanford E. Thompson. Cloth; 6½ × 9 ins.; 249 pages, many illustrations. Price, 50 cents.

Intended to demonstrate the efficiency of reinforced concrete for factory buildings by descriptions of many examples of successful constructions. The first part contains general instructions as to the design and construction of reinforced concrete buildings. The second part consists of descriptions of nine different reinforced concrete factories, with detailed drawings fully explained in the text. In thoroughness of treatment and discrimination in selection this part is excellent, the material presented being mostly new and in such shape as to be available for reference as to current practice. Reviewed in "Engineering News," February 20, 1908. See page 31.

CONCRETE FACTORIES—An Illustrated Review of the Principles of Construction of Reinforced Concrete Buildings, including reports of the Sub-Committee on Tests, the U. S. Geological Survey and the French Rules of Reinforced Concrete. Compiled by Robert W. Lesley (1907). Boards; 6½ × 10 ins.; 152 pages; many illustrations. Price, $1.00.

CEMENT SIDEWALKS (1908).—How to Lay a Walk that Will Wear Well. Practical hints for the beginner and for the experienced Worker. 37 pages; illustrated, Price, 25 cents.

The Engineering News Book Department, New York City.

American Concrete Co.

General Offices, 80 William St.
NEW YORK

Contractors and Engineers for Construction Work

Warehouses, factories, coal pockets, trestles.
Water works, dams, irrigating systems, retaining walls, bridges.
Residences, bungalows, company houses.
Sewers, pavements, sidewalks, curbs.
Docks, bulkheads, piers.
Fireproof stairs, floors, partitions, roofs

Manufacturers of Cement and Concrete Products

Roofing tile, floor tile, sewer tile, structural tile.
Floor units, building blocks, beams, stucco blocks, plain or glazed brick.
Artificial stone of stock or special size and design.
Fence posts, telegraph and trolley poles, piles, posts.
Ornamental castings, monuments, garden furniture.
Porch columns and railings.
Composition flooring, porcela marble, fireproof wall finish, waterproofing.

Manufacturers and Dealers in Reinforcing Material, Machinery, Tools and Supplies for Concrete Workers

Plain and patent bars, in stock lengths or cut, bent and assembled to order.
Wire cloth, expanded metal, bolts, pipe, wire.
Mixing, conveying and hoisting machinery.
Drying cars, tracks and industrial railway equipment.
Barrows, shovels, tampers, trowels, finishing tools.
All grades of cement, colors, paints, waterproofing.
Form clamps, molds, block machine equipment.
Asbestos cement products, shingles, sheathing, wall boards, flooring.
Fireproof metal doors, sash and trim.

Miners and Shippers of Sand and Crushed Stone

Concrete sand in all grades, white quartz sand, facing sand, blasting sand, fire sand, glass makers' sand.
Concrete gravel in all grades; asphalt and roofers' gravel.
Crushed stone in all sizes.
Crushed marble, granite, quartz and marble dust.

Competent contracting or supervising engineering service.
Complete manufacturing equipment.
Unsurpassed shipping facilities, both by water and rail.
Information on all matters pertaining to the concrete industry.

THEORY AND PRACTICE OF REINFORCED CONCRETE ARCHES.—A Treatise for Engineers and Technical Students. By Arvid Reuterdahl, Chief of Bridge Dept., Spokane, Wash. (1908). Cloth; 6 × 9¼ ins.; 126 pages; 41 illustrations; 17 tables. Price, $2.00 net.

The object of this book is to fill the gaps and to remove the obscurities of previous books on the subject of arches, caused by lack of consecutive mathematical processes. In the Preface, the author states that "Every principle involved in the graphical treatment is explained thoroughly and in detail in the theoretical portion of the work. There are no missing steps in the necessary mathematical analysis of the theory as set forth".

The work is divided into three Chapters: Theory of the Elastic Arch; Design of a Reinforced Concrete Arch; Calculations of Fiber Stresses.

Reviewed in "Engineering News," Dec. 17, 1908.

GENERAL SPECIFICATIONS FOR CONCRETE BRIDGES. By Wilbur J. Watson (1908). Stiff Paper; 6¾ × 9½ ins.; 82 pages; tables and illustrations. Price, $1.00.

This contains the same clauses in regard to the general principles of concrete construction as contained in the author's "Specifications for Concrete Work," with additional notes on the more specific practice of bridge design and construction. Reviewed in "Engineering News," March 12, 1908. See page 23.

CONCRETE COUNTRY RESIDENCES.
Stiff Paper; 9¾ × 12¾ ins.; 94 pages; illus. Price, $1.

A large collection of reproduced photographs of country residences and other buildings of stucco on wire lath and on brick, and of reinforced concrete, showing what can be done with these building materials.

COMPETITIVE DESIGNS FOR CONCRETE HOUSES OF MODERATE COST (Ranging from $2,000 to $4,500 each). 1908. Boards; 15 × 19¼ ins.; many illustrations. Price, $1.00.

Each design is accorded double facing pages of the large portfolio sheet, with elevations, sections, floor plans, perspective, description and cost data. Reviewed in "Engineering News," May 14, 1908.

PORTLAND CEMENT SIDEWALK CONSTRUCTION—Based on the Experience of Many Successful Contractors. Compiled by P. B. Beery. Paper; 27 pages. Price, 50 cents.

CEMENT HOUSES AND HOW TO BUILD THEM. By W. A. Radford. 157 pages; illustrated. Price, 50 cents.

FOUNDATION AND CONCRETE WORKS. By E. Dobson. 120 pages; 32 illustrations. Price, 60 cents.

MODERN CEMENT SIDEWALK CONSTRUCTION. By Charles Palliser, (1908). Cloth; 4¾ × 7½ ins.; 64 pages; illustrated. Price, 50 cents.

A practical treatise for the workman, explaining in simple language the method of making durable cement sidewalks.

FAILURES IN CONCRETE SIDEWALKS and How to Correct Them. By L. J. Riegler. With Specifications for Portland Cement Sidewalks. Reprinted from "Engineering News." Paper; 4½ × 7 ins.; 17 pages; 5 figures and folding insert. Price, 25 cents, net.

CLASS 4

CONCRETE BLOCKS AND ARTIFICIAL STONE

THE MANUFACTURE OF CONCRETE BLOCKS AND THEIR USE IN BUILDING CONSTRUCTION. By H. H. Rice, Wm. M. Torrance, and others, (1906). Cloth; 6 x 9 ins.; 122 pages; illustrated. Price, $1.50 net.

This book is made up of two prize papers and of extracts from nine other papers submitted in a prize competition. The papers are brief but are full of practical information from men experienced in concrete-block construction and are especially valuable because of the range of ideas and variety of viewpoints. The first paper covers the field of the manufacture and use of concrete blocks in a concise and comprehensive way, dealing with materials, mixing, manufacture, curing, facing, cost and construction. The second paper gives considerable space to forms of blocks and to patent-rights and their worth, and is a discussion of values. The extracts from the other nine papers include the location, design and arrangement of plant, the forms of block, selection of materials, proportioning and consistency of mixture, methods of mixing, block machines and molding, curing, facing and coloring, ornamental work, waterproofing, cost and building construction. There is a good index, and also a copy of the regulations of the City of Philadelphia for manufacture, use and tests of blocks. The book is a many-sided practical treatise on concrete-block manufacture and construction and should prove of value to those interested in this form of building construction. Reviewed in "Engineering News," Aug. 16, 1906.

CONCRETE BLOCK MANUFACTURE—Processes and Machines. By Harmon H. Rice, (1906). Cloth; 5½ x 9¼ ins.; 152 pages; 46 illus.; Price, $2.00.

Presents the well-established principles which practice has shown to be applicable to the manufacture of cement blocks and considers the theoretical and technical questions of value in the manufacture and use of concrete blocks. Contains 26 short chapters and is somewhat general in its make-up, but is a commendable presentation of the subject and should be in the possession of anyone interested in the use of concrete blocks. Reviewed in "Engineering News," Aug. 16, 1906.

CEMENT TILE, (1908). Why they are better than clay tile; How they are affected by acids and alkalies; How to Manufacture them at a profit. 50 pages; illus. 25 cents.

CONCRETE BLOCK, (1908). Suggestions for their manufacture and sale at a profit. 30 pages. Price, 35 cents.

HOLLOW CONCRETE BLOCK HOUSES. By H. Wittekind, (1906). Portfolio; 65 plates. Price, $1.00.

CONCRETE BLOCKS—Their Use in Residences (Reprinted from "Concrete"). 1908. Paper; 6 x 9 ins.; 32 pages; illus. 25c.

HOLLOW CEMENT BLOCK BUILDING CONSTRUCTION. By S. B. Newberry. 25 pages; illustrated. Price, 50 cents.

ARTIFICIAL STONE, TERRA COTTA, ETC. By John Black. 92 pages; illustrated. Price, 25 cents.

PRACTICAL CONCRETE BLOCK MAKING. By C. Palliser, (1908). Cloth; 5 × 7 ins.; 90 pages; illustrated. Price, 50 cents. A simple practical treatise for the workman, explaining the selection of the materials and the making of substantial concrete blocks and cement brick, with directions for making molds.

CLASS 5

WORKING RULES AND STATISTICS

HAND-BOOK OF COST DATA FOR CONTRACTORS AND ENGINEERS. By Halbert P. Gillette, (1905). A Reference Book Giving Methods of Construction and Actual Costs of Materials and Labor on Numerous Engineering Works. Morocco; 4¼ × 6¾ ins.; 610 pages; 30 illustrations; many tables. Price, $4.00 net.

The title of this book tells exactly what the book is—a record of costs of actual work. It deals with many classes of engineering practice, one section (Sec. 6) being devoted to "Cost of Concrete Construction of All Kinds." This section is by far the largest in the entire book, the subject being treated in the most exhausting manner.

The author first takes up the subject of voids and quantities of ingredients of concrete and presents some new views, based on his own experience. Then he enters into a discussion on the cost of sand, stone, and gravel; the mixing, handling and placing of concrete, and the cost of forms. One hundred pages are devoted to the cost of various classes of concrete work. A valuable reference book for every engineer and contractor. Reviewed in "Engineering News."

THE CEMENT WORKER'S HAND-BOOK—COVERING MORE THAN FIFTY MOST IMPORTANT SUBJECTS ON CEMENT AND ITS USES IN CONSTRUCTION. Compiled to meet the requirements of the Common Workman. By W. H. Baker, (1905). Cloth; 4¼ × 6½ ins.; 86 pages. Price, 50 cents.

The author of this book has had 20 years experience as a mason and in the various uses of cement, and his first-hand knowledge of his subject is evident. The book deals with Cements, Mortars, Concretes, Cast Masonry and Practical Notes on Cement Work. Under Cast Masonry, the author describes the methods to be used in making walls, floors, ceilings, walks, (as good a description as there is in print), curbs, posts, cisterns, grave vaults, culverts, building blocks, troughs, chimney tops, sewers, statuary and ornaments. The book is written in language that any mason can understand. Reviewed in "Engineering News," June 15, 1905.

DIRECTORY OF PORTLAND CEMENT MANUFACTURERS OF THE UNITED STATES. Complied by the Association of American Portland Cement Manufacturers. Corrected Annually. Leather; 3 × 5¼ ins.; 100 pages. Price, $1.00.

This directory lists under the incorporated names of the companies, the firms now manufacturing Portland Cement in this country, together with what information is available concerning projected mills. The capitalization, officers, and estimated production of the factories are also given. The May, 1908, issue, reviewed in "Engineering News," June 11, 1908.

THE PORTLAND CEMENT INDUSTRY FROM A FINANCIAL STANDPOINT.—By Edwin C. Eckel, 1909. Cloth; 6 × 9¼ ins.; 93 pages. Folding map. Price, $2.00, net.

This book has been written for the benefit of bankers and other investors. It contains just enough technical information to inform the non-technical man of the nature of cement and of its processes of manufacture, but the main discussion relates to the financing of cement mills. Reviewed in "Engineering News," March 18, 1909.

THE BUILDING MECHANICS' READY REFERENCE.—Cement Workers' and Plasterers' Edition. By H. G. Richey. Leather; 4 × 7 ins.; 458 pages; 193 illustrations and many tables. Price, $1.50 net.

This is the fourth of the author's series of builders' handbooks, the others being for (1) Carpenters and Woodworkers, (2) Stone and Brick Masons, (3) Plumbers, Steamfitters and Tinners. This edition is an admirable book for the mason or mechanic who wishes to learn something about the rapidly-growing cement industry. It is not technical, so that all of the higher mathematical discussions and standards of design are omitted; but the basis of good construction is clearly explained. Reviewed in "Engineering News," August 13, 1908.

HANDBOOK FOR CEMENT USERS. Edited by C. C. Brown. Third Edition, (1905). Cloth; 6 × 9 ins.; 378 pages; illustrated. Price, $3.00.

DIRECTORY OF AMERICAN CEMENT INDUSTRIES. Edited by Chas. C. Brown, M. Am. Soc. C. E. Fourth Edition, 1906. Cloth, 5½ × 8½ ins.; 622 pages. Price, $5.00.

STANDARD PLANS FOR HIGHWAY BRIDGES of Reinforced Concrete. Designed by Wilbur J. Watson, M. Am. Soc. C. E. Published in five series. Write for details and prices.

These plans are designed for the use of county and city engineers, highway commissioners, contractors, etc. They are all designed to carry a concentrated live load of eighteen tons (except floors for steel bridges) with the proper factor of safety. The designs are complete, embracing side and wing walls, parapets, railings, etc., and the data sheets give complete dimensions, sizes and lengths of bars, and estimates of quantities in details.

CONCRETE BRIDGES AND STRUCTURES. By H. G. Tyrrell (1909.) Flexible leather; hand book size; 128 pages; 51 illustrations; flexible black. Price $2.50.

Part I. Concrete Bridges for Railroads and Highways. Gives in concise and practical form the most approved methods of design and construction of concrete bridges, and an example of the solution in detail of a concrete arch bridge. Also a table of existing arches, with half-tone illustrations.

Part II. Minor Bridge Structures. Trestles and Culverts. It contains 30 original tables and drawings, and upwards of 900 separate estimates for concrete structures of various sizes and forms. Also beam and slab tables, and charts of comparative costs.

CLASS 6

MISCELLANEOUS BOOKS

With Important References to Concrete Work

HANDBOOK FOR SUPERINTENDENTS OF CONSTRUCTION, Architects, Builders and Building Inspectors. By H. G. Richey, 1905. Morocco; 5 × 7 ins.; 743 pages; illustrated. Price, $4.00.

Divided into six parts, one of which is devoted to Lime; Sand; Cement; Mortar and Concrete; Concrete Construction; Fireproof Floor Construction; Partitions, etc.; Architectural Terra Cotta; Fire-Proof Construction and Fire Protection of Buildings.

TREATISE ON MASONRY CONSTRUCTION. By Ira O. Baker, C. E., D. Engg. Ninth Edition, 1909. Cloth; 6 × 9 ins.; 568 pages; 152 illustrations. Price, $5.00.

Chapter III deals with Lime and Cement (33 pages); Chapter IV, with the preparation of Mortar, Cement and Artificial Stone (35 pages).

ANALYSIS OF ELASTIC ARCHES: Three-Hinged, Two-Hinged and Hingeless, of Steel, Masonry and Reinforced Concrete. By Joseph W. Balet, 1908. New York. Cloth; 6 × 9 ins.; 315 pages; illustrated with diagrams and folding plates. Price, $3.50, net.

Details on request.

INSPECTION OF THE MATERIALS AND WORKMANSHIP EMPLOYED IN CONSTRUCTION. By Austin T. Byrne, C. E. Second Edition, 1907. Cloth; 5 × 7 ins.; 550 pages; many tables. Price, $3.00.

Contains one section on Cementing Materials and one on Artificial Stone.

WATERPROOFING: AN ENGINEERING PROBLEM. By Myron H. Lewis, C. E., 1909. Paper; 6 × 9 ins.; 53 pages; illustrated. Price, 50 cents, net.

This is a reprint of a paper read before the Municipal Engineers of the City of New York, and forms a valuable contribution to the scant literature on the subject.

Contents: Introduction; General Scope of the Subject; Necessity of Waterproofing; Causes for Neglected Conditions of the Waterproofing Industry; Design of Waterproof Systems; Design of Substructural Waterproofing; Design of Superstructural Waterproofing; Necessity for Inspection of Waterproofing; Summary of Requirements for Successful Work; Capillary Attraction and Repulsion; Practical Details of Construction; Remedying Damp and Leaky Conditions; Cost of Waterproofing; Typical Specifications for Waterproofing; Bibliography; Discussion of Paper.

CLASS 7

IMPORTANT FOREIGN BOOKS

(Excepting English)

DER EISENBETONBAU—SEINE THEORIE UND AUWENDUNG. By Emil Mörsch, Third Edition, Revised and Enlarged, (1908). Stuttgart, Germany. Cloth; 7¼ × 10 ins.; 376 pages; 347 illustrations.

The first edition of this book was brought out in 1902 by the firm of Wayss & Freytag, of Neustadt. In the preface to the Second Edition, published in 1905, the author states that "In the absence of a uniform literature, and in view of the number of profusely recommended systems, the first edition of this work effected the purpose of familiarizing those interested in the scientific principles of reinforced concrete with all the experimental researches available at that time." The Second Edition, representing a complete revision of the former edition, was considered necessary on account of the advances in the knowledge of reinforced concrete work. The recommendation and official regulations made by the various German societies and by the Prussian government in 1904-5, had inspired confidence in the new method of building, but even the best of directions could not altogether obviate mistakes and failures, where the proper knowledge of the co-operative effects of the two materials—steel and concrete—was lacking. In addition to this, all directions presumed a knowledge of approved rules of construction, which was, however, very difficult to obtain from periodical literature, on account of all sorts of systems being simultaneously described and conflicting opinions being expressed. The general portion deals with examples chiefly relating to the practical reinforcement of T-beams, columns and arches, under the most widely varying loads. The following, and most comprehensive part, treats of the theory of reinforced concrete, and the properties of materials and applies the theory in the closest possible manner to the results of the tests. The third portion, covering the employment of reinforced concrete, reviews the most important fields of its utilization.

The present edition, published early in 1908, includes new tests made by Wayss & Freytag relating to the shear stresses in slab-beams and those made with continuous beams, and also the results of the tests undertaken for the Reinforced Concrete Commission of the Jubilanumstiftung der Deutscher Industrie, by the Materials Testing Institute at Stuttgart.

Mörsch's "Eisenbetonbau" is probably the clearest exposition of European methods in reinforced concrete construction and has become a recognized standard. The Engineering News Book Department has obtained the rights of translation and publication in English and will publish the work, complete and fully illustrated, during the present year (1909).

MATERIALBEDARF UND DICHTIGKEIT VON BETON MISCHUNGEN. By H. Nitzche, (1907). Leipzig, Germany. Paper; 7 × 9¾ ins.; 16 pages; 2 folding plates. Price, 1.6 marks; American, 65 cents.

Contains a discussion of the proportioning of concrete to secure greatest density, with two diagrams giving volumetric proportions of sand and stone for given percentage of voids in stone and given excess of mortar.

EINFLUSS DER ARMATUR UND DER RISSE IM BETON AUF DIE TRAGSICHERHEIT. By E. Probst (1907). Reports of the Royal Testing Institution, Gross-Lichterfelde West, Berlin, Germany. Paper; 7¼ × 10½ ins.; 144 pages; 9 plates and 77 text illustrations. Price, 15 marks; American, $6.00.

This is a detailed report of tests of concrete beams reinforced with plain rods and various types of deformed rods. The tests comprise three series (1) 58 tests on beams 6.3 × 8.7 ins. long, to exhibit the general phenomena of flexure, location of neutral axis, shape of cross-section surface after deformation, actual elongations and compressions, and relation of first cracks to loading and to type of reinforcement, etc. (2) Tests to determine whether the tension cracks in concrete beams are apt to permit rusting of the steel. (3) Tests in 50 beams, 6 × 12 × 39 ins., reinforced with a single rod, to produce failure in bond and to determine the bond values. These tests are well worth study.

Reviewed in "Engineering News," Jan. 16, 1908.

DAS MATERIAL UND DIE STATISCHE BERECHNUNG DER EISENBETONHAUTEN—WITH SPECIAL REFERENCE TO BUILDING CONSTRUCTION. By Max Foerster, Professor of Structural Engineering at the Dresden Technical College, Leipzig, (1907). Paper; 7¼ × 11 ins.; 248 pages; 93 illustrations. Price, 6 Marks; American, $2.40.

This German treatise deals only with the material, its strength and its calculation, leaving out of consideration the field of actual application. The subject of strength is handled by reviewing the German and French reports of tests and experimental researches. The theoretical work for which the formulas for calculation are developed seems conservative rather than marked by novelty or individuality. The nature of the contents and the style of treatment will appeal more to the foreign than to the American reader. Reviewed in "Engineering News," Oct. 17, 1907.

BRUCKEN IN EISENBETON. By C. Kersten. Part I., Slab and Girder Bridges. Paper; 6¾ × 9¾ ins.; 142 pages; 360 illustrations. 4 Marks or $1.60. Part II., Arch Bridges. Paper; 6¾ × 9¾ ins.; 147 pages; 356 illustrations. 4 Marks, or $1.60.

In this book the treatment is almost wholly descriptive and illustration, mainly by drawings, is freely used. As in many European books, there is neither an index, detailed table of contents or titles under the illustrations. Reviewed in Engineering News; Part I., May 16, 1907; Part II., February 20, 1908.

LE COSTRUZIONI IN CALCESTRUZZO ED IN CEMENT ARMATO. By Giuseppe Vacchelli. Third Edition, Milan, (1906). Cloth; 4 × 6 ins.; 383 pages; 270 illus.; Price, 4 Lira; American, $1.20.

A hand-book for Italian conditions covering the subjects of concrete and reinforced concrete. Cement and Mortar occupy about 100 pages; concrete (plain) about 130, and reinforced concrete the same number. European practice alone is represented. Reviewed in "Engineering News," Aug. 16, 1906.

CONCRETE-STEEL BRIDGES AND VIADUCTS. (Written in Russian). By J. Podolsky, (1906). Paper; 7 × 10¼ ins.; 476 pages; 304 figs.; Many Tables; Moscow; Price, 5 Roubles; American, $8.00.

This is the only book in the engineering literature of the world exclusively devoted to bridges and viaducts of reinforced concrete. The author treats the subject in a clear manner and covers the field comprehensively.

Twenty-four pages only are devoted to the general characteristics of reinforced concrete structures; 182 to the description and illustration of reinforced concrete bridges and viaducts, dealing with highway bridges, footwalk bridges, railroad and trolley bridges, aqueducts and bridges of later designs, including all kinds of beam and arch bridges. All of the more important structures are described and such data on materials, span, dimensions, stresses, and acceptance tests as were available are given.

This is followed by 81 pages of the work of construction, which treats of the selection of materials, form and centers, reinforced concrete columns and piles, piers and ice cutters, the testing of bridges and finally, some bridge failures. The main value of the book, however, will be found on the last portion on the design and computation of reinforced concrete bridges. It covers 142 pages and contains chapters on the selection of allowable stresses in the materials used, the methods of computation, the formulas to be used for slabs and beams and, finally, on the computation of stresses in arches.

The subject is covered very thoroughly and forms a valuable book, and although the text is written in a language that is known very little outside of the Russian Empire, much valuable information and many suggestions may be obtained from the plates and drawings with which the book is profusely illustrated. Reviewed in "Engineering News," May 17, 1906.

ETUDE EXPERIMENTALE DU CEMENT ARME. By R. Feret, Director of the Laboratoire des Ponts et Chaussees at Boulogne-sur-Mer. Paris, (1906). Paper; 6½ × 10 ins.; 777 pages; 197 illus. Price, 20 francs; American, $6.00.

This is a most thorough study of reinforced concrete, made by a practical experimenter and able theoretician, whose work of research on cement, sand and concrete has been known for many years to the civil engineering profession the world over. This book is not a text-book for ready use, nor a compilation of useful information on the subject, but an original contribution to the science of engineering. It treats of the material, concrete, and its combination with metal, and not of the applications of reinforced concrete, the author assuming that what is of most importance is the thorough knowledge of the material and its behavior under stress, and that this once gained, the scientific application of the material in engineering structures will be a matter of course.

This book is divided into four parts treating of Experimental Data, (90 pages), Theory and Methods of Computation (230 pages, Bibliography of Reinforced Concrete (140 pages) and the author's Researches on the Resistance of Mortar and Concrete. The Bibliography is sub-divided into five parts—General Observations and Tests, Theory and Computations, Systems of Construction, and Applications. It is the fullest bibliography on the subject ever published. Condensed from Review by Leon P. Moisseiff, in "Engineering News," October 18, 1906.

RECUEIL DE TYPES DE PONTS POUR ROUTES EN CEMENT ARME.—Calculated in conformity with the Ministerial Order of Oct. 20, 1906. By N. de Tedesco, with the collaboration of Victor Forestiér. From "Encyclopedie des Travaux Publics." Paris. Paper; 6½ × 10 ins.; 307 pages; 54 illustrations; 8 folding plates in separate atlas (10½ × 12¾ ins.). 25 francs or $7.50.

In October, 1906, the Ministry of Public Works of France issued a circular entitled "Instructions Relating to the Use of Reinforced Concrete" (see "Engineering News," March 21, 1907) which was primarily intended to serve as regulations for the government engineers, but at the same time formed something of a standard for work to be executed in France. It is one of the few existing authoritative or official sets of rules to be followed in reinforced concrete construction and is remarkably simple in its details. With this as a basis, the authors of the present book have compiled a series of designs of highway bridges in which the spanning members are reinforced-concrete beams. The work consists of a presentation of the government rules, with their application to the design of beams and slabs in a bridge and concludes with the detailed design of eight bridges varying in size from a single roadway 13 ft. (4 meter) span to a double roadway 98 ft. (30 meter) span. The methods of computation are presented in utmost detail, first for the general case and then in specific quantities for each of the eight designs. The entire mathematical design of each bridge is minutely detailed just as it would come from the hand of an experienced bridge designer; every step is shown. In the supplementary volume plates are given showing the details of each structure on a very large scale and in an entirely satisfactory manner.

The theory developed in this book and its application to one span so as to indicate its use in practice are well worthy of appreciation. Tiresome repetition of the same methods on seven other spans seems a waste of energy. The whole impression gathered from the work is that it is an example of too infinite detail.

Reviewed in "Engineering News," Nov. 14, 1907.

TRAITE THEORETIQUE ET PRATIQUE DE LA RESISTANCE DES MATERIAUX APPLIQUEE AU BETON ET AU CIMENT ARME. By N. de Tedesco, editor-in-chief of "Le Ciment," and A. Maurel, Engineer-Constructor, (1904). Paris. Cloth; 7 × 10 ins.; 640 pages; 199 figures. American price, $7.50.

This volume is chiefly noteworthy for its collection in one place of the various theories that have been advanced to explain the action of concrete reinforced with metal. The first section, on the properties of cement and cement mortars and concretes, is relatively brief. In the second part of the book, which comprises some 200 pages, the author gives in detail the theories of reinforced concrete that have been developed by the leading investigators up to the time of its publication. In the concluding portion of the book, the author discusses practical methods of calculations for concrete-steel in compression, tension, flexure and shear, and follows this with the presentation of simple formulas for slabs, beams, etc.

Reviewed in "Engineering News," Aug. 18, 1904.

HANDBUCH FUER EISENBETONBAU. Edit. by F. Von Emperger. The purpose of this work is practically identical with that of existing books on reinforced concrete, except that it contains a fuller and more voluminous treatment. Each section is written by a special contributor. The main part of the space is devoted to description and illustration of actual structures compiled from many sources and covering work done in many countries, making it practically a descriptive album of reinforced concrete construction. The work is of undoubted value, but the authors have apparently not had the foreign (that is, outside Germany) reader in mind, as they seem to have based their work on a desire to give German literature a descriptive treatise comparable to those which French and English-speaking engineers are already provided.

Vol. I. History of Development and Theory of Reinforced Concrete, (1907). Paper; 7¼ × 10½ ins.; 449 pages; 564 illus.; 1 fold. Plate. Price, 18 Marks; American, $7.20.

Contains (1) a historical review of the development of reinforced-concrete construction, with some notes also of the origin and development of the artificial cement industry; (2) a discussion of the chief tests on columns, beams and arches of reinforced concrete; (3) the theory of design and analysis of reinforced concrete. An abundant citation of test figures and extensive bibliographies appended to each chapter are features of distinct value. Reviewed in "Engineering News," April 16, 1908.

Vol. II. The Material and its Manipulation, 1907. Berlin. Paper; 7¼ × 10½ ins.; 243 pages; 420 illus.; 1 fold. plate. Price, 12 Marks; American, $4.80.

Half the book, 121 pages, devoted to forms and centers, with many illustrations. Twenty pages are devoted to descriptions of European concrete mixers. Reviewed in "Engineering News," March 12, 1908.

Vol. III. Engineering Structures, (1907).

This volume, although third in number, was the first published. It consists of two parts, which may be obtained in separate books or bound together.

Part 1 covers two classes of structures: (1) Foundations and Walls; (2) Dams, River and Harbor Structures and the like. Paper; 7¼ × 10½ ins.; 330 pages; 547 illus.; 4 fold, plates. Price, 15 Marks; American, $6. Reviewed in "Engineering News," May 16, 1907.

Part 2 covers four classes of structures: (1) Tanks and other containers for liquids (147 p.); (2) Pipes, Conduits, Aqueducts, etc. (79p); (3) Shaft-linings and other mine details (21p); (4) Tunnels and Subways (63p). Paper; 7¼ × 10½ ins.; 642 pages; 503 illus. Price, 15 Marks; American, $6.00 Reviewed in "Engineerings News," August 15, 1907.

Parts 1 and 2, Vol. III., bound together, 34 Marks; American, $13.60.

Each of the various classes mentioned is more thoroughly covered, as regards number and variety of structures described, than in any other work on reinforced concrete.

HILFSMITTEL FUER EISENBETON-BERECHNUNGEN. By Ad. Jöhrens, Wiesbaden, Germany, (1907). Paper; 10¾ × 14¼ ins.; 29 pages; 22 illustrations and 11 plates. Price, 4.60 Marks; American, $1.84.

"Tables and diagrams calculated for $E_s/E_c = 15$, and rectilinear stress-variation". Reviewed in "Engineering News," Nov. 14, 1907.

The Engineering News Book Department, New York City.

BETON-KALENDER. A Pocket-book for Concrete and Reinforced-Concrete Construction and Related Branches. Annual. Berlin. (Latest, 1908). 4 × 6½ ins.; 2 parts: I, Cloth, 296 pages; II, Paper, 426 pages. Many illustrations. Price, 4 Marks; American, $1.60.

This novel annual hand-book of Concrete Working was first brought out in 1906. It contains much of interest to American Engineers.

ELEMENTS DE RESISTANCE DES MATERIAUX APPLIQUE AU BETON ARME. By R. Séquéla, (1908). Paris. Paper; 6½ × 10 ins.; 126 pages; illustrated. Price, Fr. 7:50; American, $2.25.

A theoretical treatise. The methods of calculations are not new, but they are complete and are presented in a systematic manner. Of little use to the American engineer, but for the text-book writer and the theoretician, the complete treatment should form a valuable reference. Reviewed in "Engineering News," August 13, 1908.

DER BETON UND SEINE ANWENDUNGEN.—Ast. 1907. $4.00.
LA CONSTRUCTION EN CIMENT ARME.—Berger et Guillerme. 1902. Text and Atlas. $14.40.
DER PORTLANDZEMENT UND SEINE ANWENDUNGEN IN BAU-WESEN.—Büsing. 1905. 3 vols. $4.20.
DER EISENBETON.—Christophe. 1905. $14.00.
EISENBETONKONSTRUKTIONEN.—Fölzer. 1908. 2 vols.; Vol. I. $3.60.
BERECHNUNG DER TRAGWERKE AUS BETONEISEN ODER STAMPFBETON.—Haberkalt und Postuvanschitz. 1908. $4.80.
DER EISENBETON IN HOCHBAU.—Haberstroh. 1908. $2.00.
HILFSMITTEL FUR EISENBETON-BERECHNUNGEN.—Jöhrens. 1907. $1.85.
TABELLEN FUR EISENBETON-KONSTRUKTIONEN.—Kaufmann. 1907. 2 vols. $1.80.
DIE WICHTIGSTEN DECKEN UND WANDE DER GEGENWORT. —Kolbe. 1905. $3.00.
DER BETON-EISENBRUCKE CHANDERON.—MONTBENOM IN LAUSANNE.—Melan. 1906. $1.00.
STUDIE UB. D. KONSTITUTION D. PORTLAND-ZEMENTS.—Meyer. 1903. $1.80.
UNTERSUCHUNGEN AN PLATTENTRAGERN AUS EISENBETON. —Möller. 1907. $2.40.
PORTLAND-ZEMENTFABRIKATION.—Naske. 1903. $4.00.
METHOD DE CALCUL DU BETON ARME AVEC BAREMES.—Nivet. 1908. $2.25.
DER EISENBETON IN THEORIE U. KONSTRUKTION.—Saliger. 1908. 2 vols. $2.40.
EISENBETONTABELLEN FUR PLATTEN UND UNTERZUGE.—Schellenberger. 1907. $4.00.
DER PORTLAND-ZEMENT.—Schmidt. 1906. $1.60.
RESULTATE DER UNDERSUCHUNG VON ARMIERTERN BETON. —Schüle. 1906. $4.00.
ZEHLENTAFELN FUR PLATTEN, BALKEN UND PLATTEN-BALKEN AUS EISENBETON.—Weese. 1908. $3.25.
FABRICATION ET CONTROLE DES CHAUX HYDRAULIQUES ET DES CIMENTS. By H. Bonnani. Price, $2.00.
CIMENT ARMEE. By Paul Christophe. Price, $7.50.
CIMENTS ET CHAUX HYDRAULIQUES. By E. Chandlot. Price, $4.50.
CHAUX ET SELS DE CHAUX APPLIQUE A L'ART ENGINIEUR. By G. Grange. 471 pages; 81 illustrations. Price, $5.40, net.

CLASS 8

TRADE PUBLICATIONS

Some of the dealers in cement, manufacturers of cement and concrete machinery, and concrete construction companies issue trade publications which form an important branch of the literature on the subject. Some of these publications are discussions of principles that are of practical value to the engineer or contractor. Among these may be mentioned the following:

EXTENSIVE CONCRETE CONSTRUCTION FOR GRAIN STORAGE. An illustrated reprint from an article in The Manufacturers' Record, describing some of the new grain storage facilities of the Pennsylvania and the Baltimore & Ohio Railroads in Baltimore. Issued by the Lesley & Trinkle Company, Philadelphia. See page 37.

BUILDING A 920-FOOT CONCRETE BRIDGE IN TWENTY-THREE DAYS. An illustrated description of the construction of the McCall Ferry Power Plant, on the Susquehanna River, in which a concrete arch bridge 920 feet long and 50 feet wide was built for carrying the huge crane and the cars used in constructing the dam. Issued by the Lesley & Trinkle Company, Philadelphia. See page 37.

CONCRETE PILING. The permanence of concrete piling, its freedom from the dangers that wood piling is subject to, its low ultimate cost and other advantages of concrete over wood piling have greatly increased its popularity and use. These advantages are fully treated in this 24-page pamphlet describing and illustrating the Raymond System of Concrete Piling. Issued by the Raymond Concrete Pile Co., New York. See 2d cover page.

CONCRETE SEPARATOR. An illustrated folder describing the use of the McCarthy Separator and its advantages over other methods employed in concrete construction, of holding forms rigid against the weight of soft concrete. Issued by the Concrete Separator Co., New York. See page 25.

KOSMOCRETE: A 32-page pamphlet illustrating and describing the various forms of sewer, drain and well pipe, sanitary traps; coal slides; chimney flues; hot air flues; flue linings; ornamental chimney tops and paving, manufactured by The Wilson and Baillie Mfg. Co., Brooklyn, N. Y., under the Trade Mark name "Kosmocrete." See page 43.

HYDRATED LIME IN CONCRETE AND CEMENT MORTARS. By E. W. Lazell, Ph. D. A discussion of methods for rendering concrete impervious to water, showing from the results of tests and conclusions of various investigators that hydrated lime is the best material procurable both for use in concrete to render the mass more water-tight, and in cement mortars to render them more plastic, without in either case materially decreasing the strength. Published for free distribution by the Charles Warner Company, New York. See page 31.

LIMOID.—A pamphlet issued by the Charles Warner Company, New York, explaining the chemical composition, use and advantages of this form of lime. See page 35.

PILE PROTECTION, showing the advantages of Lock Joint Pipe for the protection of piles in wharves, warehouses, trestles, etc. A pamphlet illustrating and describing work done by the Lock Joint Pipe Co. and the use of the pipe for the protection of piles. Issued by the Lock Joint Pipe Co., New York. See page 27.

THE CEMENT MORTAR IN THE WORLD'S FOURTH LARGEST CHURCH. A reprint in pamphlet form of an article in "The Engineering Record," describing and illustrating the construction of the Cathedral of St. John the Divine, New York, in which mortar and concrete made with "Giant" Portland cement is used. Issued by The American Cement Company. See page 37.

REINFORCED CONCRETE IN CAR BARN AND SHOP. An illustrated pamphlet describing the buildings of the Central Pennsylvania Traction Co., of Harrisburg, Pa., built with "Giant" Portland cement. Issued by The American Cement Company. See page 37.

THE DIETRICHS CLAMP.—An illustrated folder describing a clamp that greatly facilitates quick work in concrete construction and makes possible the building of houses, silos and other structures with the two-form board method, thus allowing the form boards to be removed while the concrete is still damp. Issued by The Dietrichs Clamp Co., Little Ferry, N. J. See page 25.

RANSOME HANDBOOK.—Illustrates and describes in detail the machinery manufactured by the Ransome Concrete Machinery Co. It also gives much valuable information regarding the mixing of concrete and concrete construction. 5 × 7 inches; 144 pages; many illustrations and folding plates. Issued by The Ransome Concrete Machinery Co., Dunellen, N. J. See page 17.

RANSO E RECORD.—An eight-page bulletin containing information for contractors and describing Ransome concrete machinery. Issued periodically and supplied gratis by The Ransome Concrete Machinery Co., Dunellen, N. J. See page 17.

SPECIFICATIONS FOR USING WHITE PORTLAND CEMENT MORTAR.—By Albert Moyer, Assoc. M. Soc. C. E. Third Edition. Describes many uses of white Portland cement and illustrates a number of office buildings, residences and other structures in which it has been used. Published for gratuitous distribution by the Vulcanite Portland Cement Co., New York. See page 33.

CEMENT SIDEWALK PAVING SUGGESTIONS AS TO METHOD OF CONSTRUCTION.—By Albert Moyer, Assoc. Am. Soc. C. E. A valuable 32-page pamphlet giving instructions, fully illustrated by diagrams and photographs of the mixing of concrete for sidewalk construction, directions for laying sidewalks, and specification suggestions. Published for gratuitous distribution by the Vulcanite Portland Cement Co., New York. See page 33.

DIAMOND BARS FOR CONCRETE-STEEL CONSTRUCTION.—By Edwin Thacher, M. Am. Soc. C. E. Gives reasons derived from experience and rules based thereon for the proper design of concrete-steel slabs, beams and girders, with formulas, tables, and examples to facilitate rapid calculation. A valuable reference book for engineers. Published by the Concrete-Steel Engineering Company, New York. See page 19.

CONCRETE-STEEL BRIDGES.—Illustrates a number of concrete-steel arch bridges designed and built by the publishers, showing the great variety of purposes which they serve, and that concrete-steel bridges, through proper ornamentation and exterior treatment, can be designed in harmony with the surroundings. A very handsomely printed pamphlet of 96 pages bound in heavy flexible paper. Published by the Concrete-Steel Engineering Company, New York. See page 9.

REINFORCED CONCRETE BUILDINGS.—A bi-monthly bulletin illustrating and describing modern reinforced-concrete construction of factories, warehouses, and other buildings for industrial purposes. Each bulletin is devoted to a specific building and gives all details of measurements, etc., plans, elevations, cost data and much information regarding advantages of reinforced concrete for special purposes. With the bulletin is supplied a handsome strong and adjustable binding cover. Published by the Turner Construction Company, New York. See page 19.

REINFORCED CONCRETE PILES.—Illustrates a new form of combination pile, in which a wooden pile is wrapped with a double coating of reinforced concrete, giving distinct advantages of weight, protection and cost. Issued by The Monks-Ripley Pile Co., New York. See page 4.

CONCRETE COTTAGES.—A partial reproduction of the prize designs submitted for the "Concrete House Competition" of the Association of American Portland Cement Manufacturers. Gives Illustrations, Descriptions, Estimates of Cost and Comments by the Committee. Published by The Atlas Portland Cement Co., New York. See page 31.

HENNEBIQUE SYSTEM.—A 96-page catalogue issued by The Hennebique Construction Co., New York, describing the Hennebique system of construction and its special advantages, giving results of tests, and more than one hundred illustrations, showing many varieties and type of structures erected on this system. See page 15.

DIGGING MACHINERY.—The greater part of this publication is devoted to dredges, excavators, derricks and coal-handling machinery. In each case a space of one or two full pages is devoted to illustration and description, generally showing a photograph of the machine in operation. The catalogue is 9½ × 11½ inches, contains 150 pages and nearly 200 illustrations. Published by The Hayward Company, New York. See page 2.

CONCRETE CONSTRUCTION ABOUT THE HOME AND IN THE FARM.—A practical book of 128 pages valuable not only to cement users, but also as a text-book on the subject of cement work to farmers and property owners. It contains specifications for mixing and handling Atlas Portland cement and specifications for almost every variety of construction used about a small farm or large estate. It is fully illustrated with examples of practical work. Published by The Atlas Portland Cement Co., New York. See page 31.

IMPORTANCE OF WATERPROOF FLOORS IN MILL CONSTRUCTION.—A reprint of an article from the "Engineering Magazine," showing the importance of this feature in fire protection and showing illustrations of structures in which waterproof lining has been used. Issued by The Hydrex Felt and Engineering Co., New York. See page 45.

WATERPROOF ENGINEERING. By Edward W. De Knight. A paper read before the Boston Society of Civil Engineers, containing much valuable information on this subject, supplemented by photographs illustrating the necessity for waterproofing of concrete structures. Issued complimentary by The Hydrex Felt and Engineering Co., New York. See page 45.

AMERICAN CONCRETE SYSTEM.—Two folders describing concrete roofing tile and concrete as applied to building construction. Issued by the American Concrete Company, New York. See page 41.

DRYERS.—Part of the necessary equipment of every cement works is the drying apparatus. This pamphlet gives descriptions and many illustrations of driers, tests, etc. Issued by the Ruggles-Coles Engineering Company, New York and Chicago. See page 35.

INTERLOCKING STEEL.—A Catalogue describing the du Mazuel system of reinforcement. The book is well illustrated and contains a large amount of useful data for concrete contractors and engineers. Issued by the Concrete Interlocking Corporation, New York. See page 13.

BOOKS FOR ENGINEERS

All books listed at NET prices.

ANALYSIS OF ELASTIC ARCHES. By J. M. Balet.
Cloth; 6×9 ins.; 320 pages; 184 diagrams; 6 folding plates; 19 tables. $3.00

EARTH DAMS. By Burr Bassell.
Cloth; 6×9 ins.; 68 pages; 31 illustrations. $1.00

FIELD PRACTICE OF RAILWAY SURVEYING. By Willard Beahan.
Cloth; 6×9 ins.; 260+x pages; 43 illustrations; 7 folding plates. $3.00

REINFORCED CONCRETE. By Buel and Hill.
Cloth; 6×9 ins.; 499 pages; tables, diagrams and 340 illustrations. $5.00

ECONOMICS OF RAILWAY OPERATION. By M. L. Byers.
Buckram; 6×9 ins.; 672 pages; many illustrations, diagrams and forms showing standard and most recent practice. $5.00

DICTIONARY OF MECHANICAL DRAWING. By Geo. H. Follows.
Cloth; oblong, 8¼×10¾ ins.; 60 pages; 45 illustrations. $1.00

EARTHWORK AND ITS COST. By H. P. Gillette.
Cloth; 5×7½ ins.; 256 pages. $2.00

ECONOMICS OF ROAD CONSTRUCTION. By H. P. Gillette.
Cloth; 6×9 ins.; 48 pages; 9 illustrations. $1.00

EARTHWORK TABLES. By R. S. Henderson.
Heavy paper; oblong, 8½×11¾ ins.; 32 pages. $1.00

ENGINEERING CONTRACTS AND SPECIFICATIONS. By J. B. Johnson.
Cloth; 6×9 ins.; 566 pages. $3.00

CITY ROADS AND PAVEMENTS. By W. P. Judson.
Cloth; 6×9 ins.; 197 pages; 69 illustrations. $2.00

ROAD PRESERVATION AND DUST PREVENTION. By W. P. Judson.
Cloth; 6×9 ins.; 144 pages; 16 illustrations. $1.50

DESIGN OF STEEL MILL BUILDINGS. By M. S. Ketchum.
Cloth; 6×9 ins.; 464+xiv pages; 189 figs.; specifications, problems; 15 tables. $4.00

DESIGN OF WALLS, BINS AND GRAIN ELEVATORS. By M. S. Ketchum.
Cloth; 6×9 ins.; 394+xiv pages; 260 figs.; 40 tables; 2 folding plates. $4.00

DESIGN OF STEEL HIGHWAY BRIDGES. By M. S. Ketchum.
Cloth; 6×9 ins.; 550+xiv pages; 300 figs.; 77 tables; 8 folding plates. $4.00

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